

30268

# FH-150R

## SERVICE MANUAL

*AEP Model  
UK Model  
E Model*



- FH-150R consists of ST-177R, TA-177R, TC-177R and APM-177M.
- Remote commander RM-177R is supplied accessory.


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#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.



**COMPACT HI-DENSITY  
COMPONENT SYSTEM  
SONY®**



## TA-177R

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## FEATURES

### Compact hi-density component system with simple operation

Consists of an FM stereo FM-AM tuner, a high quality cassette deck, and an integrated amplifier, each of which can be connected quickly and securely. The functions are switched directly.

### Supplied remote commander for remote control operation

Allows you to control the whole system from a distance.

### Amplifier with power output of 40 W + 40 W (1 kHz, 5% THD) for AEP, AED, UK models, with peak music power output of 320 W for E, EA3 models

- Includes a 7-band graphic equalizer controls for fine adjustment of tone quality for both recording and playback, and a 7-band spectrum analyzer.
- Microphone mixing jack and microphone level control.

### High sensitivity and high selectivity tuner

Permits extremely precise tuning of FM/MW/LW stations (for AEP, AED, UK models) or FM/MW/SW<sub>1</sub>/SW<sub>2</sub> stations (for E, EA3 models) using the electronic digital readout on the frequency display. Five stations on each band can be memorized.

### Auto-reverse cassette deck with select cassette-deck operations

- B-type and C-type Dolby NR circuit incorporated
- Automatic tape select system
- Automatic music sensor (AMS)
- Automatic recording level control system

### 3-way speaker system with APM woofer

By installing speaker boxes in the appropriate position, the localization of the sound can be arranged to fit your listening situation.

### Newly-developed AMFB (Accurate Motional Feedback) function

Feeds back movement of Aluminum Honey-comb diaphragm on the speaker to the amplifier as electric signal in order to obtain sufficient bass sounds like a larger speaker system.



# SPECIFICATIONS

## ST-177R

System FM stereo, FM/AM superheterodyne tuner  
Quartz-locked PLL digital synthesizer system

### FM tuner section

Tuning range 87.5 – 108 MHz  
Antenna Telescopic antenna  
Antenna terminals 75 ohms unbalanced  
Intermediate frequency 10.7 MHz  
Usable sensitivity 2.3  $\mu$ V (S/N = 30 dB/75 ohms)  
Signal-to-noise ratio 78 dB (mono) 70 dB (stereo)  
Harmonic distortion at 1 kHz 0.2% (mono) 0.5% (stereo)  
Separation at 1 kHz 40 dB  
Selectivity at 400 kHz 55 dB

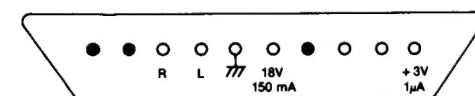
### MW/LW tuner section (for AEP, AED, UK models)

	MW	LW
Tuning range	522 – 1,611 kHz	144 – 288 kHz
Antenna	Built-in ferrite bar antenna External antenna terminal	
Intermediate frequency	450 kHz	
Usable sensitivity	Built-in ferrite bar antenna	250 $\mu$ V/m (999 kHz)
	External antenna	500 $\mu$ V/m (230 kHz)
Signal-to-noise ratio	52 dB (50 mV/m)	
Harmonic distortion	0.3% (50 mV/m, 400 Hz)	

### SW/MW tuner section (for E, EA3 models)

	SW 1	SW 2	MW
Tuning range	3.2 – 7.3 MHz	9.5 – 21.75 MHz	531 – 1,602 kHz (at 9 kHz step) 530 – 1,610 kHz (at 10 kHz step)
Antenna	Built-in ferrite bar antenna External antenna terminal		
Intermediate frequency	450 kHz		
Usable sensitivity	Built-in ferrite bar antenna	—	250 $\mu$ V/m (999 or 1,000 kHz)
	External antenna	23 $\mu$ V (5 MHz) 30 $\mu$ V (15 MHz)	100 $\mu$ V (999 or 1,000 kHz)
Signal-to-noise ratio	50 dB (5 mV)		
Harmonic distortion	0.3% (5 mV, 400 Hz)		

10-pin DC input connector of ST-177R



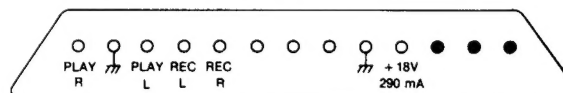
## General

Dimensions Approx. 215 × 55 × 240 mm (w/h/d)  
(8 1/2 × 2 1/8 × 9 5/8 inches)  
incl. projecting parts and controls  
Weight Approx. 0.9 kg (2 lb) net

## TC-177R

Recording system 4-track 2-channel stereo  
Frequency response DOLBY NR OFF (DIN)  
With TYPE IV cassettes (Sony METAL-S)  
30–16,000 Hz (±3 dB)  
With TYPE II cassettes (Sony UCX)  
30–15,000 Hz (±3 dB)  
With TYPE I cassettes (Sony HF-S)  
30–14,000 Hz (±3 dB)  
Wow and flutter 0.07% WRMS (NAB)  
±0.2% (DIN)  
Dimensions Approx. 215 × 115 × 240 mm (w/h/d)  
(8 1/2 × 4 5/8 × 9 5/8 inches)  
incl. projecting parts and controls  
Weight Approx. 2.3 kg (5 lb 2 oz) net

13-pin DC input connector of TC-177R



## TA-177R

Continuous RMS power output (AEP, AED, UK models)  
40 + 40 watts  
(6 ohms, at 1 kHz, 5% THD)  
30 + 30 watts  
(6 ohms, 40 Hz – 20 kHz, 1% THD)  
Peak music power output  
320 W (6 ohms) (E, EA3 models)

Inputs	Sensitivity	Impedance
PHONO (phono jacks)	25 mV	50 kilohms
CD/AUX (phono jacks)	250 mV	50 kilohms
MIC (phone jack)	1 mV	low impedance

Outputs	
PRE OUT (phono jacks)	Voltage 250 mV, Impedance 4.7 kilohms
HEADPHONES (stereo phone jack)	Accepts headphones of 8 ohms or more
SPEAKER	Accepts only the APM-177M

Frequency response PHONO: RIAA curve ± 0.5 dB  
CD/AUX 40 Hz – 30 kHz +0 -3 dB  
MIC: 100 Hz – 10 kHz +0 -3 dB  
Dimensions Approx. 215 × 115 × 235 mm (w/h/d)  
(8 1/2 × 4 1/2 × 9 3/8 inches)  
incl. projecting parts and controls  
Weight Approx. 4.5 kg (9 lb 15 oz) net

## APM-177M

Speaker system 3 way speaker system  
Speaker units Woofer : 110 cm<sup>2</sup> APM type  
Tweeter : 5 cm dia, cone type  
Super tweeter : 3.5 cm dia, cone type  
Enclosure type Bass reflex  
Frequency range 30 Hz – 20 kHz (AMFB switch ON)  
60 Hz – 20 kHz (AMFB switch OFF)  
Sensitivity 90 dB/W/m  
Impedance 6 ohms  
Dimensions Approx. 170 × 280 × 220 mm (w/h/d)  
(6 3/4 × 10 7/8 × 8 3/4 inches)  
Weight Approx. 3.1 kg (6 lb 14 oz) net per speaker

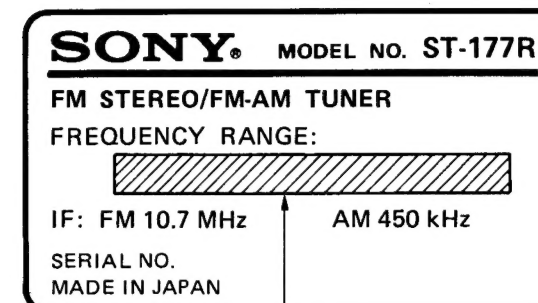
## General

Power requirements AEP, AED models: 220 V AC, 50/60 Hz  
UK model: 240 V AC, 50 Hz  
E, EA3 models: 120, 220 or 240 V AC  
adjustable, 50/60 Hz  
Power consumption 90 watts  
Dimensions Approx. 570 × 345 × 230 mm (w/h/d)  
(22 1/2 × 13 5/8 × 9 1/8 inches)  
incl. projecting parts and controls  
Weight Approx. 14.6 kg (32 lb 3 oz) net  
Approx 16.4 kg (36 lb 3 oz) in shipping carton

## MODEL IDENTIFICATIONS

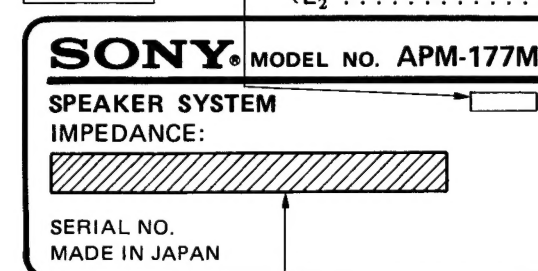
TC-177R has no difference by the model.

## ST-177R



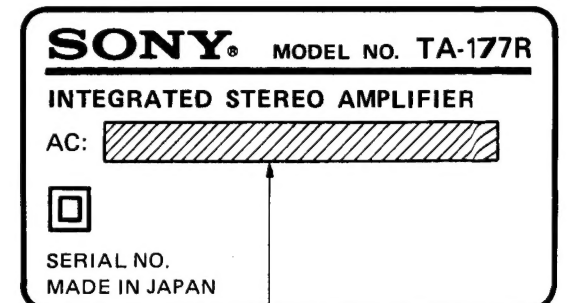
FM: 87.5 – 108 MHz SW<sub>2</sub>: 9.5 – 21.75 MHz } E, Saudi Arabia models  
SW<sub>1</sub>: 3.2 – 7.3 MHz MW: 531 – 1,602 kHz }  
FM: 87.5 – 108 MHz } AEP, Denmark models  
MW: 522 – 1,611 kHz LW: 144 – 288 kHz } G-AEP, UK models

## APM-177M



{ BLANK ..... E<sub>2</sub>, E<sub>3</sub> models  
{ POWER HANDLING CAPACITY: 40W (NOM) .... E model  
80W (MAX)

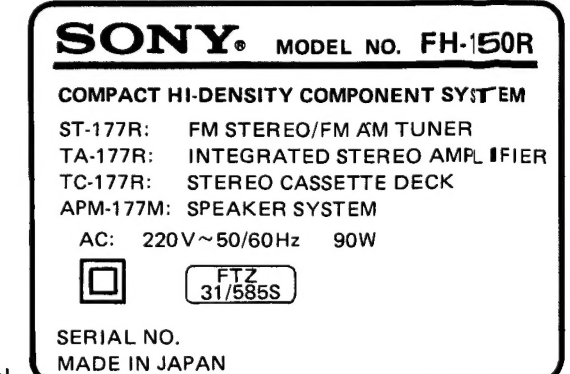
## TA-177R



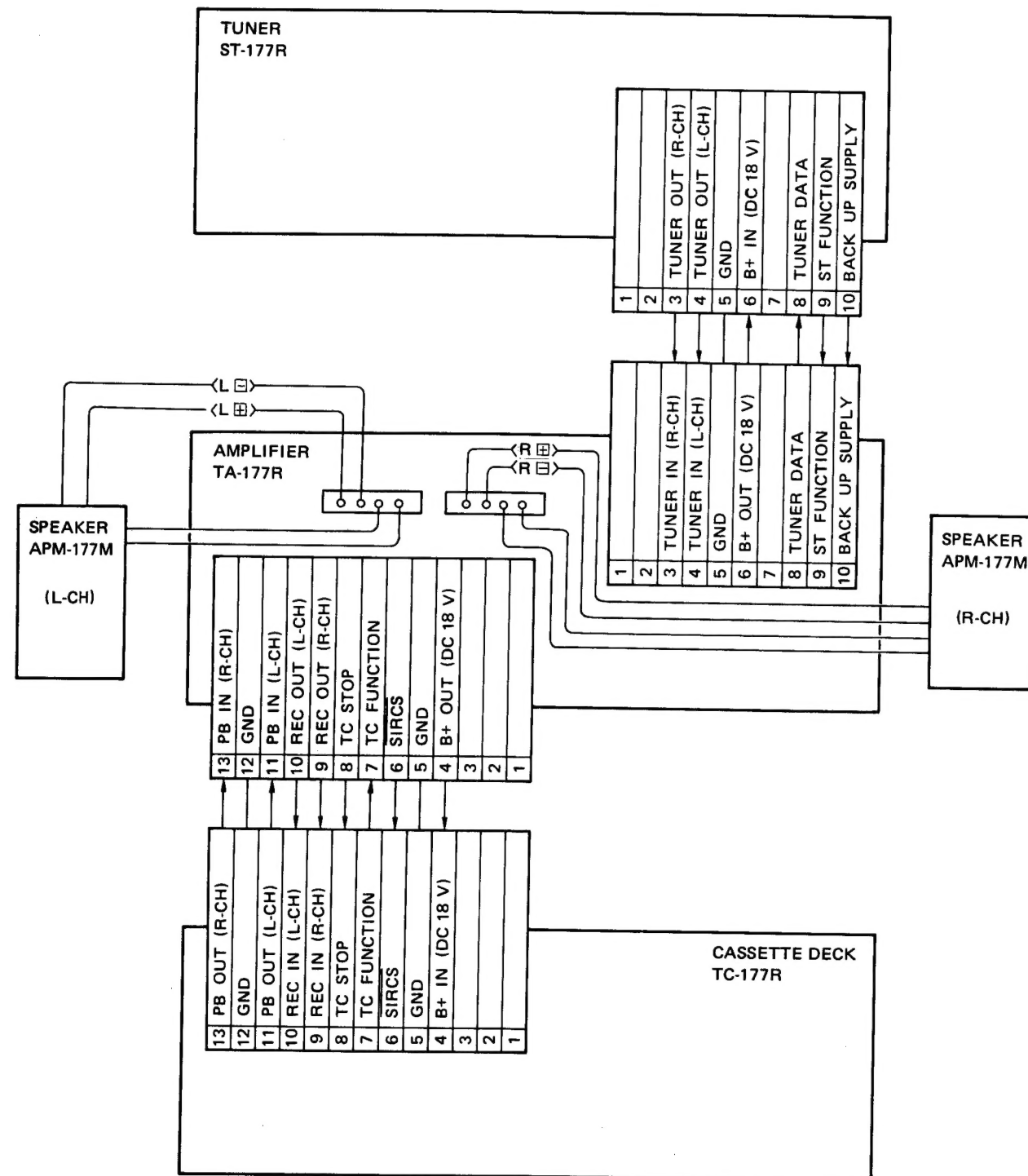
220V ~ 50/60Hz 90W ..... AEP, Denmark models  
240V ~ 50Hz 170W ..... UK model  
120/220/240V ~ 50/60Hz 90W } E<sub>2</sub>/E<sub>3</sub>, Saudi Arabia models

## G-AEP

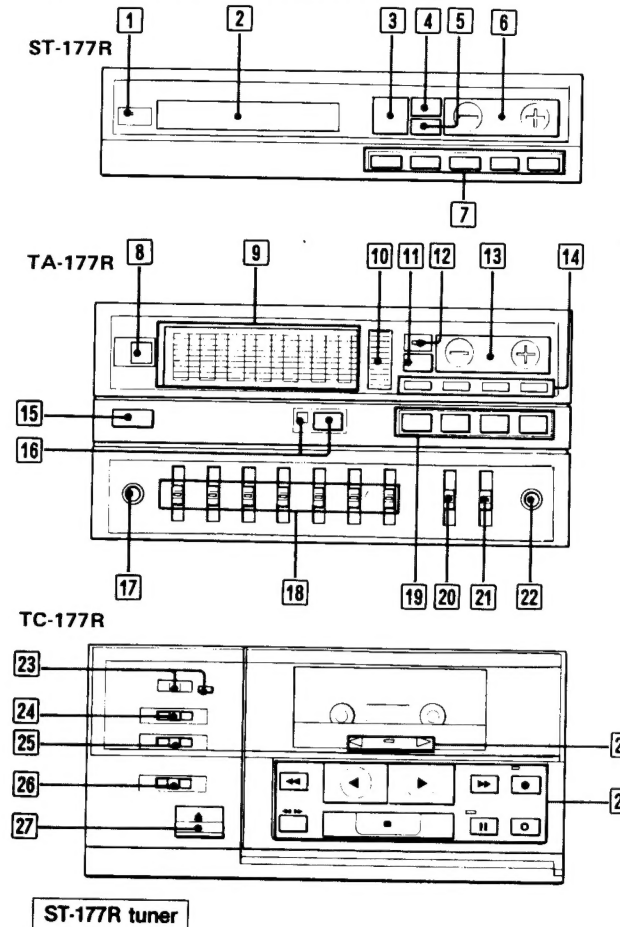
• This label is stuck on TA-177R (G-AEP model).



# CONNECTION BETWEEN EACH SET



## FUNCTION OF CONTROLS



- 1 STEREO indicator**  
Lights when an FM stereo program of sufficient signal strength is tuned in.
- 2 Band/frequency display**  
Displays the frequency received and the following items. When the PRESET button is pressed, the button number appears. When a signal is tuned in, the TUNED indicator appears. When the MEMORY button is pressed, the MEMORY indicator appears.
- 3 BAND select button**  
Press to select the desired band. The band indicator appears in the display. With each press, the band changes as follows.  
AEP, AED, UK models: FM → MW → LW  
E, EA3 models: FM → SW<sub>2</sub> (SW 9.50–21.75MHz) → SW<sub>1</sub> (SW 3.20–7.30MHz) → MW
- 4 STEREO MUTING button**  
This button serves the dual purpose of a mode and FM muting button. Normally keep this button engaged (the MUTING indicator appears) to eliminate FM interstation noise while tuning from station to station. The tuner operates in stereo mode for stereo sound sources and will be automatically switched to mono mode for monaural sound sources.
- 5 MEMORY button**  
Press to memorize a tuned-in station on a PRESET button.

- 6 TUNING button**  
Press the "+" side to tune in a higher frequency, and the "-" side to tune in a lower frequency. To change the frequency rapidly, keep the button pressed.
- 7 PRESET buttons**  
Press the appropriate button to memorize a tuned-in station or to call up a memorized station.
- TA-177R amplifier**
- 8 REMOTE SENSOR**  
Receives the infrared ray command transmitted from the supplied RM-177R remote commander.
- 9 BAND SPECTRUM ANALYZER display**  
This is a 7-division real time analyzer, and the frequency band is the same as that of the graphic equalizer.
- 10 VOL LEVEL (volume level) indicator**  
Indicates the output level of the amplifier.
- 11 MUTING button**  
Press to reduce the sound level by 20 dB. Press again to restore the same listening level as before. This function is useful when you lower the tonearm onto a record or when you answer the telephone.
- 12 Muting indicator**  
Lights when the MUTING button is pressed.
- 13 VOLUME control**  
Press the "+" side to increase the overall sound level, or the "-" side to decrease it.
- 14 Function indicators**  
The indicator lights to show the audio input source in use. When the power is turned on, the tuner indicator lights.
- 15 POWER switch**  
Depress (ON) to turn on the power of the stereo system. To turn it off, press again (OFF).
- 16 AMFB (Accurate Motional Feedback) switch and indicator**  
Depress when reinforcing bass sounds. The indicator lights up. This function will not work unless both the right and left speakers are connected. Also, this function will not work in case you are listening with headphones. Then, the indicator will go out.
- 17 HEADPHONES jack (stereo phone jack)**
- 18 GRAPHIC EQUALIZER controls**  
Slide each control upwards to increase the level of the frequency band, and downwards to decrease the level.  
63 Hz: Use to boost or cut heavy bass.  
150 Hz: Use to boost or cut normal bass.  
400 Hz: Use to adjust the power, spaciousness and warmth of the sound.  
1 kHz: Use to provide more presence for vocals.  
3 kHz: Use to boost a brighter sound and to reduce stridency.  
6 kHz: Use to adjust the brightness of sound.  
14 kHz: Use to adjust the treble.

To record or listen to the sound with the original tone quality, set all the controls at their center positions.

# **19 FUNCTION select buttons**

Select the desired button for program source.

**TAPE:** For listening to a taped program.

**CD/AUX:** For listening to or record a compact disc or auxiliary program source connected to CD/AUX inputs.

**TUNER:** For listening to or record a radio program.

**PHONO:** For listening to or record a record program source connected to PHONO inputs.

To select a tuner program, press any button of the tuner except MEMORY and STEREO MUTING buttons.

To select a taped program, set the cassette deck in playback mode.

# **20 BALANCE control**

Adjusts the balance of the left and right channel output levels.

# **21 MIC LEVEL (microphone level) control**

Controls the input level of the microphone.

Slide towards MAX to increase microphone level and towards MIN to decrease it.

When not in use of microphone mixing, set this control to the MIN position.

# **22 MIC (microphone) jack (phone jack)**

Connect a microphone for microphone mixing.

## **TC-177R cassette deck**

# **23 TAPE COUNTER and reset button**

The tape counter provides a numerical reference point. To reset to zero, press the reset button.

# **24 DOLBY NR switch**

Select the Dolby NR\* (Noise Reduction) system to be used for recording or playback.

**OFF:** To record or play back without the Dolby NR process.

**B:** To record or play back with the Dolby B-type NR process.

**C:** To record or play back with the Dolby C-type NR process.

\* Dolby and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

# **25 DIRECTION MODE selector**

Select the mode of tape transport for recording and playback.

↔ : To record or play back one side of a cassette.

↔ : To record on both sides of a cassette or to repeat playback of both sides endlessly.

# **26 TIMER standby switch**

Normally set to OFF. To start recording or playback automatically using an optional timer, set to REC or PLAY.

# **27 EJECT (eject) button**

Press to open the cassette holder.

# **28 Tape transport direction mode indicators**

# **29 Tape operation mode select buttons**

◀ (fast reverse)/AUTO PLAY ▶ button

AMS (Automatic Music Sensor) button and indicator :

Press to activate the AMS function. The indicator lights.

To deactivate that function, press again.

◀ (reverse play) button

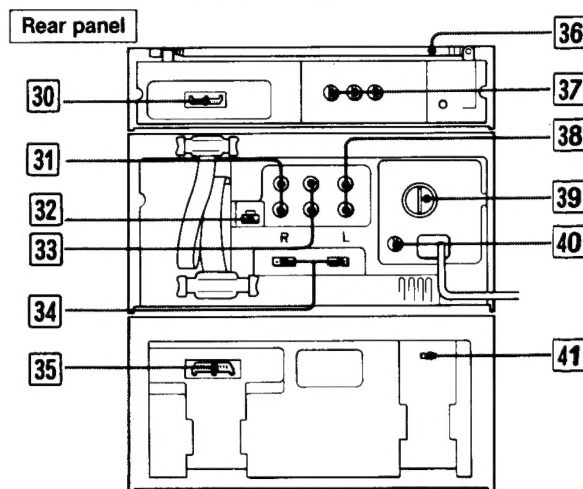
■ (stop) button ▶ (play) button

▶▶ (fast forward)/AUTO PLAY ◀◀ button

|| PAUSE button and indicator : Press to stop the tape momentarily during recording or playback. To disengage pause mode, press again. The indicator lights during pause and flickers just after the power is turned on and during record muting.

○ (record muting) button: Press to eliminate unwanted program material such as broadcasting commercials during recording.

● REC (record) button and indicator : To start recording keeping this button pressed, press the ◀ or ▶ buttons



# **30 Power connector of tuner**

# **31 PHONO inputs (phono jacks)**

Accepts the outputs of a turntable system.

# **32 CONTROL S OUT connector (4-pin)**

Connect the supplied CD player connecting cord to this connector to control the compact disc player from a remote location.

# **33 CD/AUX (compact disc/auxiliary) inputs (phono jacks)**

Accepts the outputs of a compact disc player or input sources such as a playback only tape deck.

# **34 Speaker terminals**

# **35 Power connector of tape deck**

# **36 Telescopic antenna**

Used for FM or SW (only for E, EA3 models) reception.

# **37 FM/LW/MW external antenna terminals (AEP, AED, JKC models)**

FM/SW/MW external antenna terminals (E, EA3 models)

# **38 PRE OUT outputs (phono jacks)**

Accepts the line inputs of a tape deck for tape recording. Recording the sound adjusted with the GRAPHIC EQUALIZER controls or the microphone sound mixed with sources can be made.

# **39 VOLTAGE SELECTOR (only for E, EA3 models)**

# **40 Ground terminal (only for West Germany and Italy)**

# **41 ISS (interference suppress switch)**

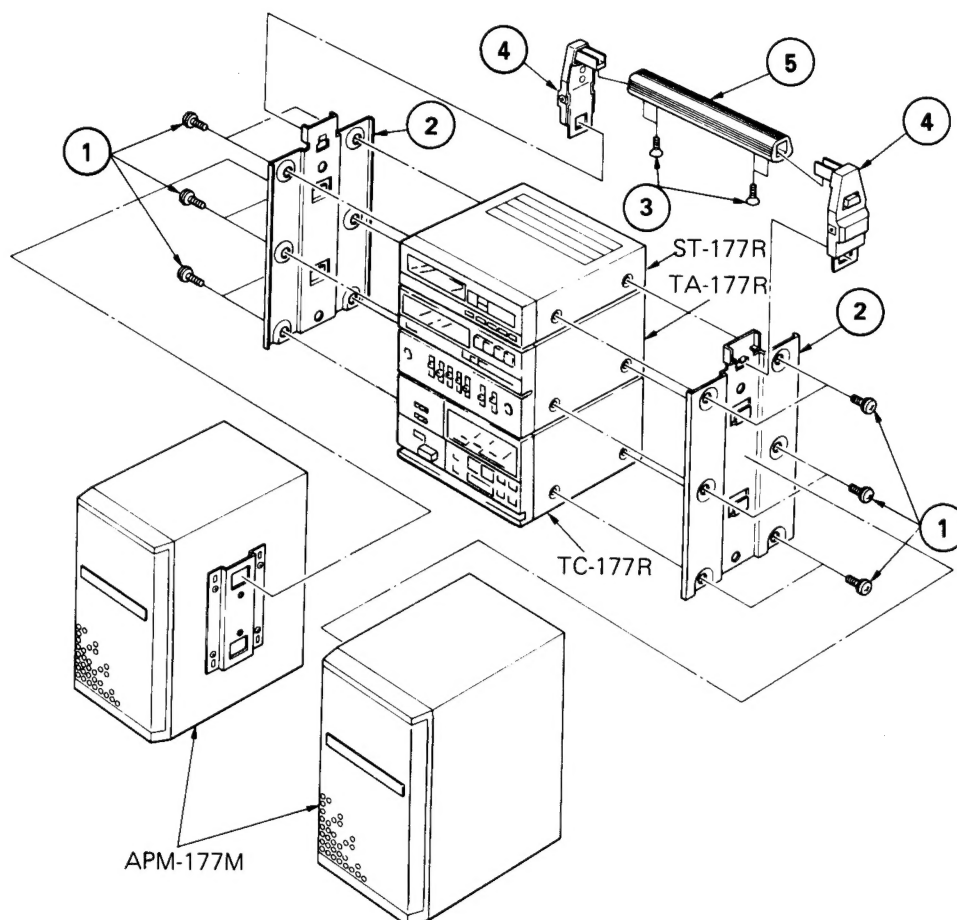
If interference is encountered while recording MW or LW program, slide the switch to position 1, 2 or 3 depending on which best reduces the noise.

## EXPLODED VIEW AND PARTS LIST

### NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



### GENERAL SECTION

No.	Part No.	Description
1	X-4902-909-1	SCREW ASSY, SIDE PLATE
2	4-910-051-11	PLATE (C), SIDE
3	7-685-247-29	SCREW +KTP 3X10 TYPE2 SLIT
4	X-4910-069-1	BRACKET ASSY, HANDLE
5	2-249-402-01	HANDLE

### ACCESSORY & PACKING MATERIAL

Part No.	Description
1-463-732-11	REMOTE COMMANDER (RM-177R)
1-556-372-61	CORD, CONNECTION (4 CORE)
3-701-630-00	BAG, POLYETHYLENE
3-765-098-11	(EXCEPT FOR G-AEP)...MANUAL, INSTRUCTION
3-765-098-41	(AEP,G-AEP,Denmark)...MANUAL, INSTRUCTION
*4-603-394-00	CUSHION (A)(RM-177R)
4-884-945-00	PARTITION

### ACCESSORY & PACKING MATERIAL

Part No.	Description
4-872-911-00	(TC-177R)...SHEET, PROTECTION
4-872-911-00	(TA-177R)...SHEET, PROTECTION
4-884-884-00	(ST-177R)...SHEET, PROTECTION
4-910-323-01	(APM-177M)...SHEET, PROTECTION
4-907-610-01	JOINT
4-910-052-01	CUSHION (FRONT), UPPER
4-910-053-01	CUSHION (REAR), UPPER
4-910-054-01	CUSHION (FRONT), LOWER
4-910-055-01	CUSHION (REAR), LOWER
4-910-353-01	(APM-177M)...CUSHION, UPPER
4-910-324-01	(APM-177M)...CUSHION, LOWER
4-914-346-21	(E2/3,Saudi Arabia).....INDIVIDUAL CARTON
4-914-346-31	(AEP,G-AEP,UK,Denmark)...INDIVIDUAL CARTON
9-911-842-XX	CUSHION (F)
X-4902-908-1	BAG ASSY, SCREW

(AEP, UK model)

**[TUNER BOARD]  
(COMPONENT SIDE)**

- ST-2 -



## SECTION 2 ADJUSTMENTS

(AEP, UK model)

**FH-150R  
ST-177R**

**FH-150R  
ST-177R**

(AEP, UK model)

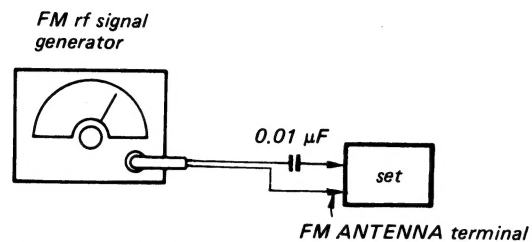
### FM SECTION 1

**Setting:**

BAND selector switch . . . . FM

#### FM OSC Voltage Adjustment

**Setting:**

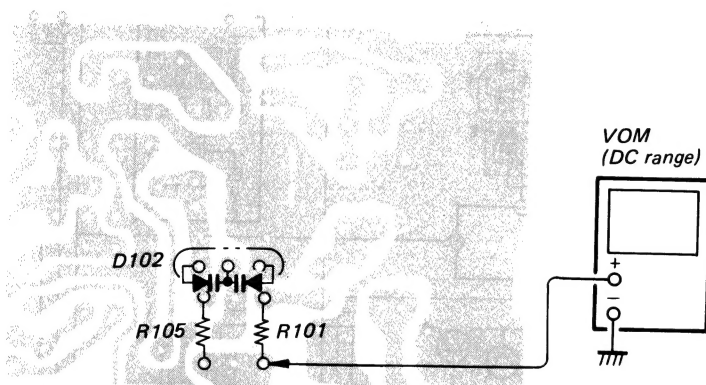


Carrier frequency: 108 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: as low as possible

**Procedure:**

1. Push the TUNING (+, -) button for 108 MHz.
2. Adjust L105 for 8.9 - 9 V reading on the VOM.

[FE BOARD] (CONDUCTOR SIDE)



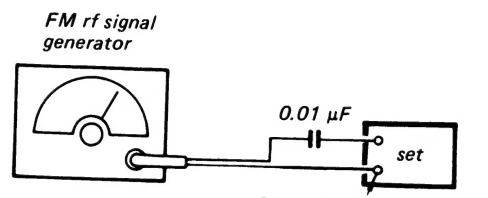
FE board

**G-AEP, F-G-AEP Model:**

The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement.

#### FM Tracking Adjustment (Except for G-AEP, F-G-AEP model)

**Setting:**

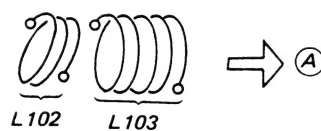


Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: 3.16 μV (10 dB)

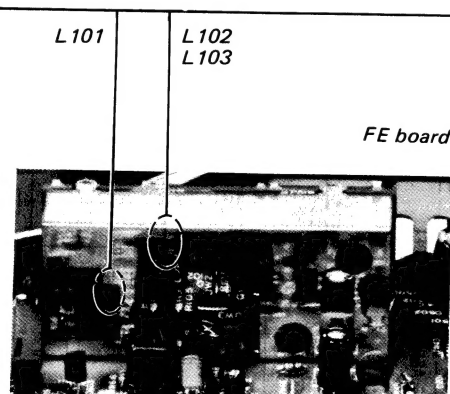
**Procedure:**

1. Push TUNING (+, -) button for 98 MHz.
2. Approach L102 and L103 not to contact each other.
3. Adjust L101 and L103, and repeat the adjustment 2 - 3 times for maximum VTVM reading.

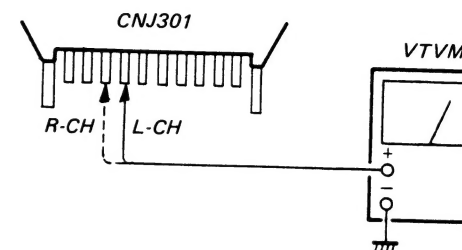
(Adjust L103 in the direction as shown by arrow Ⓐ).



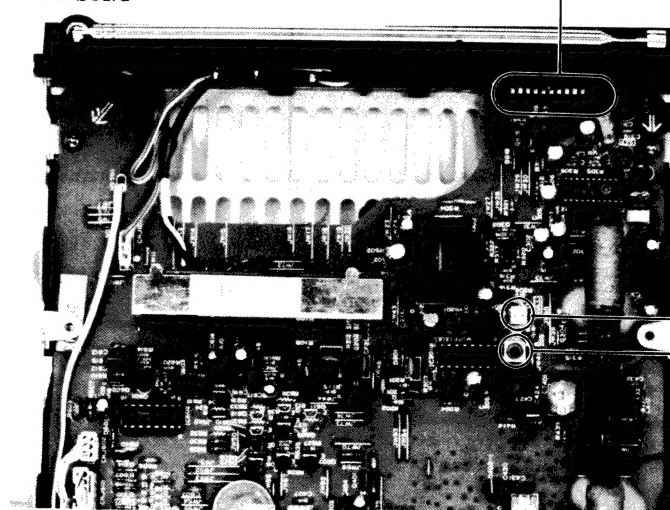
**Note:** Do not touch L 102.  
• F-G-AEP: FRENCH-G-AEP



FE board



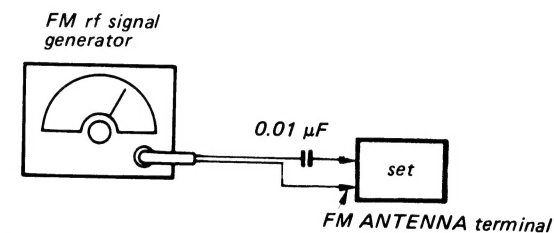
tuner board



**Note:** FM discriminator alignment should be made after FM tracking adjustment.

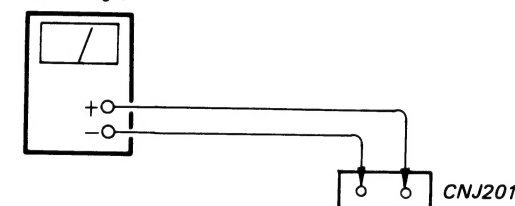
#### FM Discriminator Alignment (NULL Check)

**Setting:**



Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation (AEP, UK, F-AEP model)  
1 kHz, 40 kHz deviation (G-AEP, F-G-AEP model)  
Output level: 1 mV (60 dB)

VOM  
(DC range)



**Procedure:**

1. Push the TUNING (+, -) button for 98 MHz.
2. Adjust T201 for 0 V reading on the VOM.

**Note:**

- F-AEP: FRENCH-AEP
- F-G-AEP: FRENCH-G-AEP

CNJ201

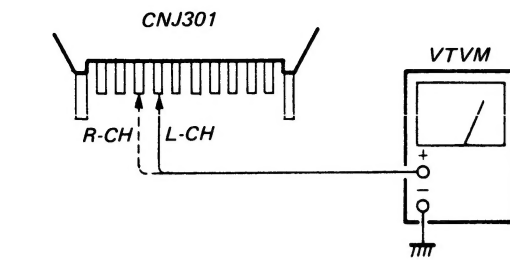
T201



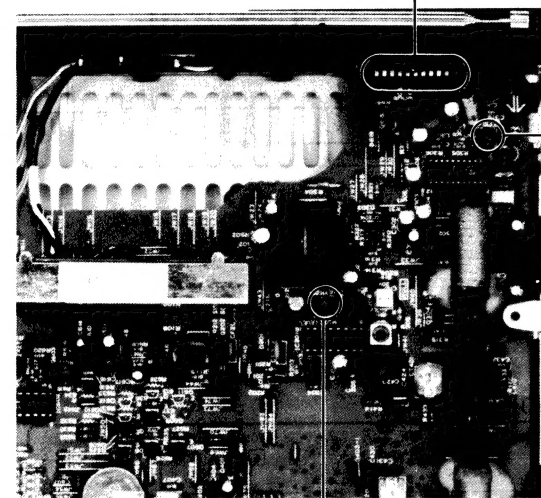
(AEP, UK model)

**FH-15OR**  
**ST-177R****FH-15OR**  
**ST-177R**

(AEP, UK model)

**FM SECTION 2**

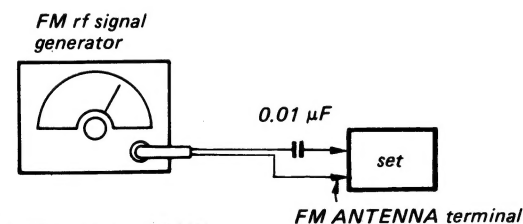
tuner board



RV201

**FM Muting Level Adjustment****Setting:**

STEREO MUTING switch . . . . ON

**Procedure:**

Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation (AEP, UK, F-AEP model)  
1 kHz, 40 kHz deviation (G-AEP, F-G-AEP model)

Output level: 17.9 µV (25 dB)

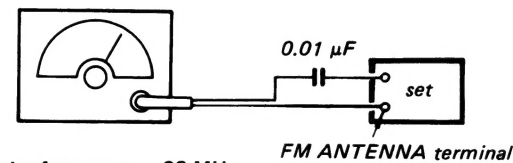
1. Push the TUNING (+, -) button for 98 MHz.
2. Adjust RV201 for a point the VTVM reading just drops to 0 V.

**Note:**

- F-AEP: FRENCH-AEP
- F-G-AEP: FRENCH-G-AEP

**FM Stereo Separation Adjustment****Setting:**

STEREO MUTING switch . . . . ON

**Procedure:**FM rf stereo  
signal  
generator

Carrier frequency: 98 MHz  
Modulation: audio (1 kHz):  
33.75 kHz deviation (AEP, UK, F-AEP model)  
20 kHz deviation (G-AEP, F-G-AEP model)  
pilot (19 kHz): 7.5 kHz deviation  
sub-channel (38 kHz):  
33.75 kHz deviation (AEP, UK, F-AEP model)  
20 kHz deviation (G-AEP, F-G-AEP model)

Output level: 1 mV (60 dB)  
Mode: stereo

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	(A)
R-CH	L-CH	(B) Adjust RT301 for minimum reading.
R-CH	R-CH	(C)
L-CH	R-CH	(D) Adjust RT301 for minimum reading.

L-CH Stereo separation: (A) - (B)

R-CH Stereo separation: (C) - (D)

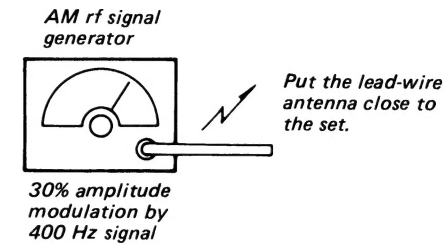
The separations of both channels should be equal.

**Note:**

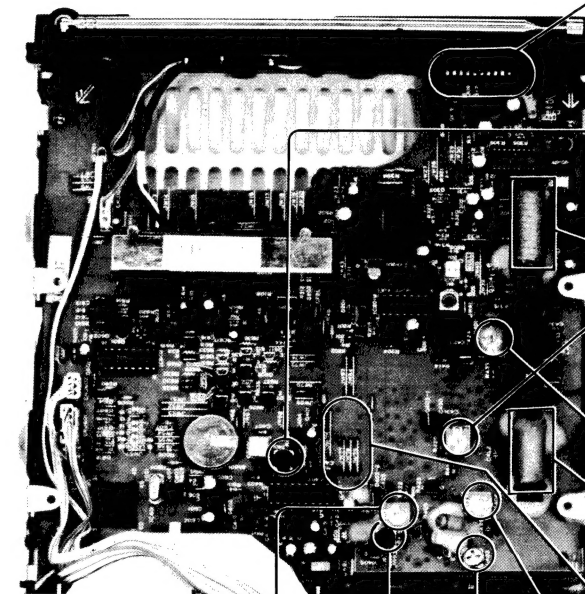
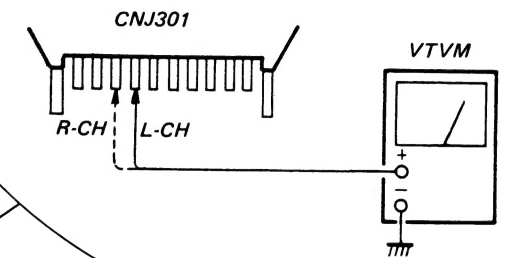
- F-AEP: FRENCH-AEP
- F-G-AEP: FRENCH-G-AEP

**AM SECTION****Setting:**

BAND selector switch: MW or LW



- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the trimmer capacitors.



CT402

L402

L403

CT404

**AM IF ALIGNMENT**

Adjust for a maximum reading on VTVM.

T401 450 kHz

**LW TRACKING ADJUSTMENT**

Adjust for a maximum reading on VTVM.

L401 170 kHz

CT403 310 kHz

**Note:** MW tracking adjustment should be made after LW tracking adjustment.

**MW TRACKING ADJUSTMENT**

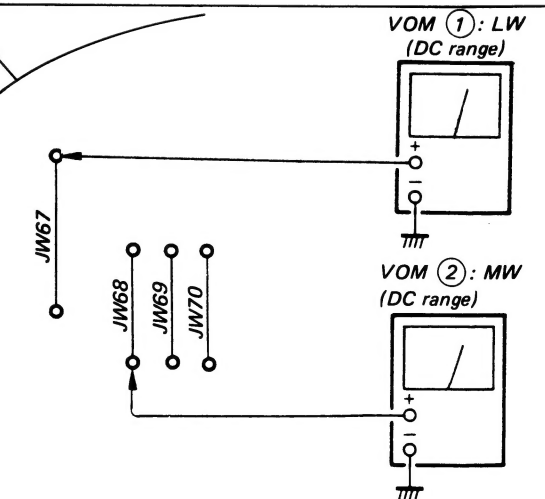
Adjust for a maximum reading on VTVM.

CT401 1,404 kHz

L401 603 kHz

**MW/LW OSC Voltage Adjustment****Procedure:**






1. Set BAND selector switch to MW.
2. Push TUNING (+, -) button for 531 kHz. Adjust L402 for 0.95 - 1.05 V VOM (2) reading.
3. Push the button for 1,602 kHz. Adjust CT402 for 8.9 - 9.0 V VOM (2) reading.
4. Set BAND selector switch to LW.
5. Push TUNING (+, -) button for 153 kHz. Adjust L403 for 0.95 - 1.05 V VOM (1) reading.
6. Push the button for 344 kHz. Adjust CT404 for 8.9 - 9.0 V VOM (1) reading.



(AEP, UK model)

1



-  : indicates side identified with part number.
-  : signal path
-  : L-CH signal path
-  : R-CH signal path
-  : B + pattern
- F-AEP: FRENCH-AEP
- F-G-AEP: FRENCH-G-AEP



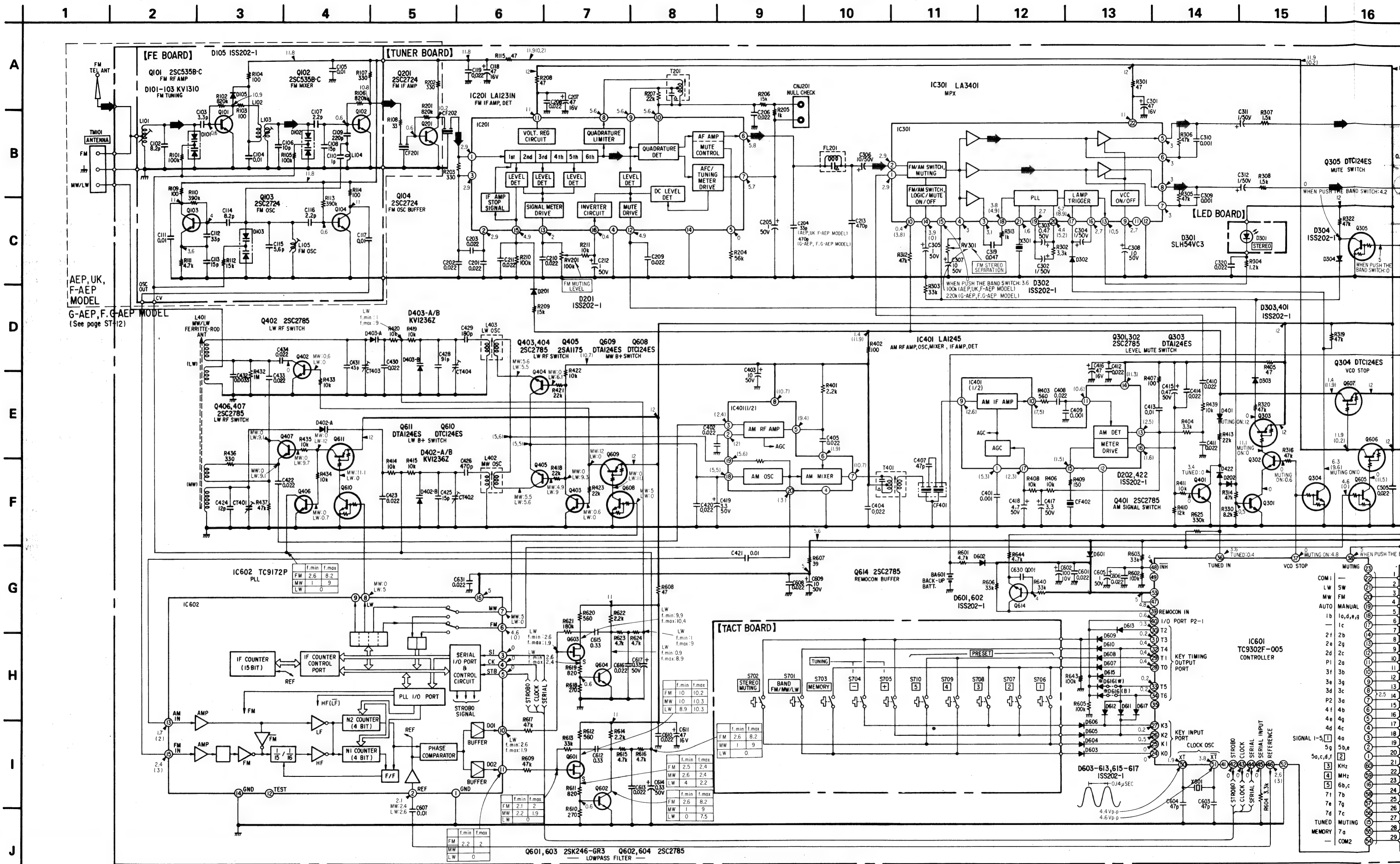
# 3-2. SCHEMATIC DIAGRAM

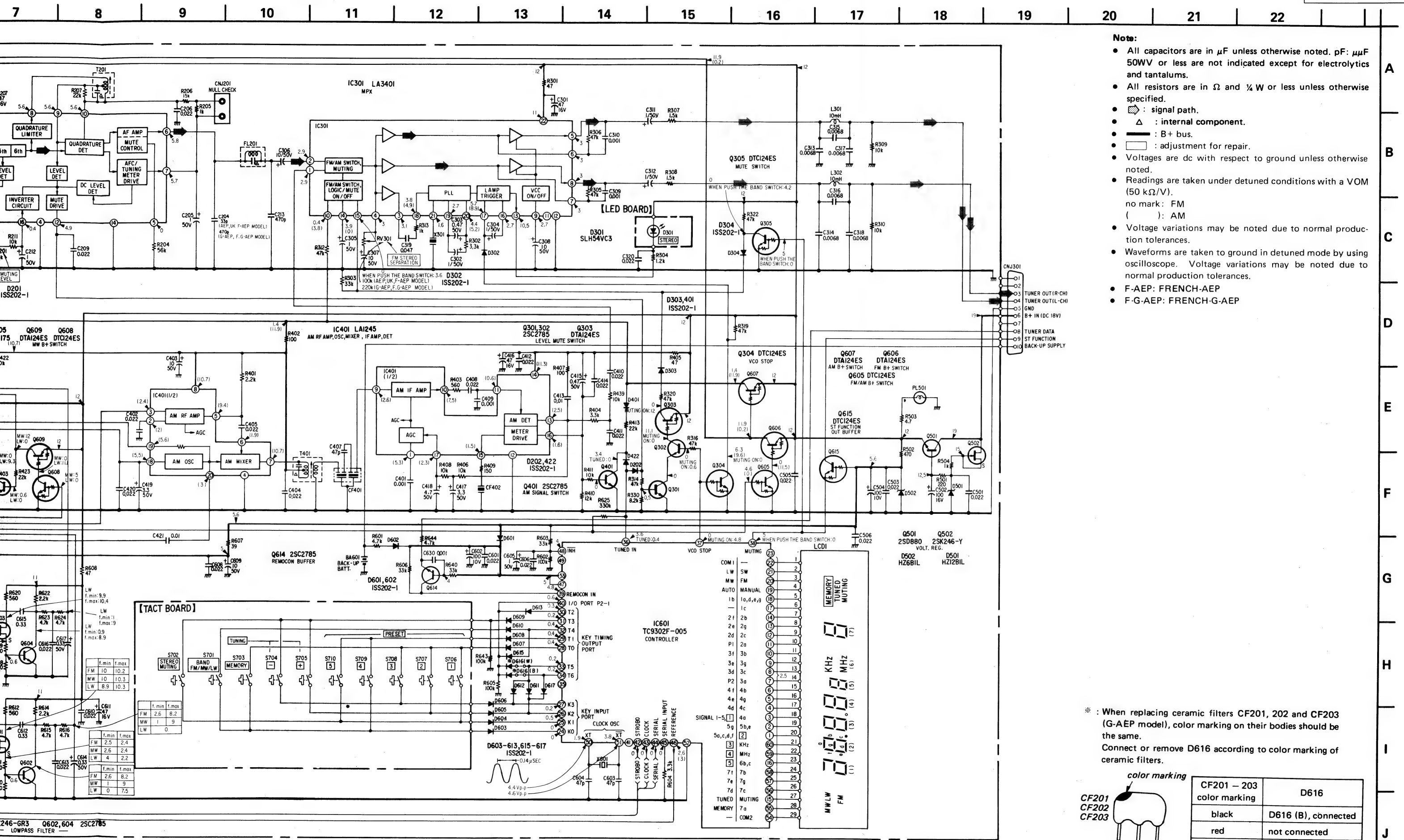
(AEP, UK model)

**FH-150R**  
**ST-177R**

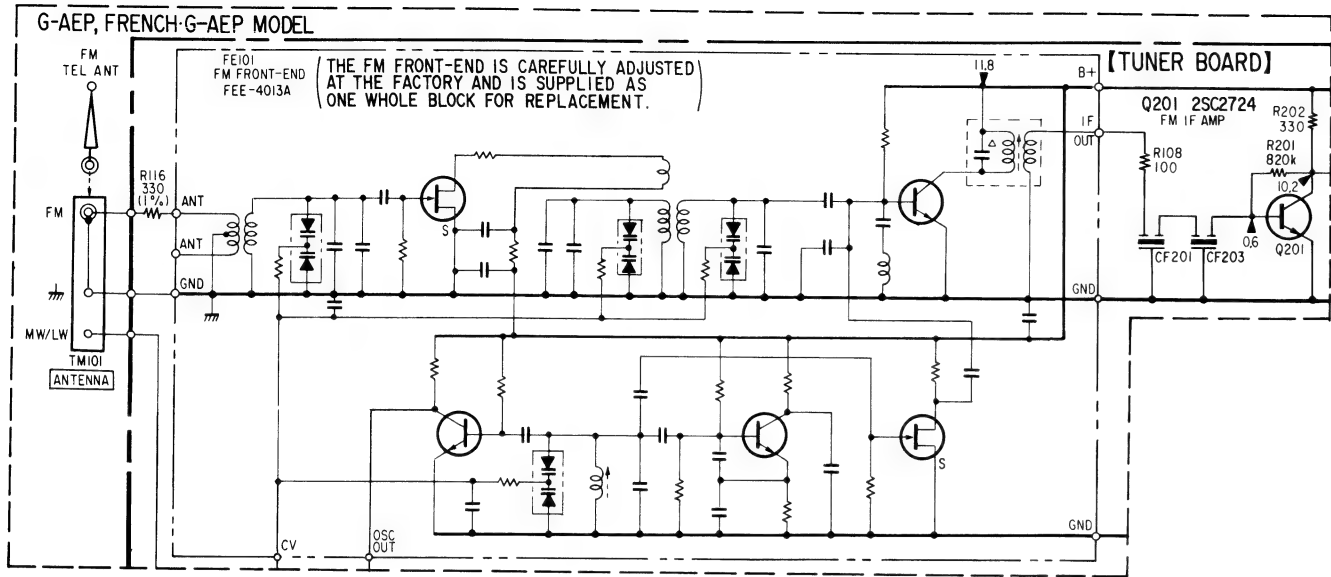
**FH-150R**  
**ST-177R**

(AEP, UK model)

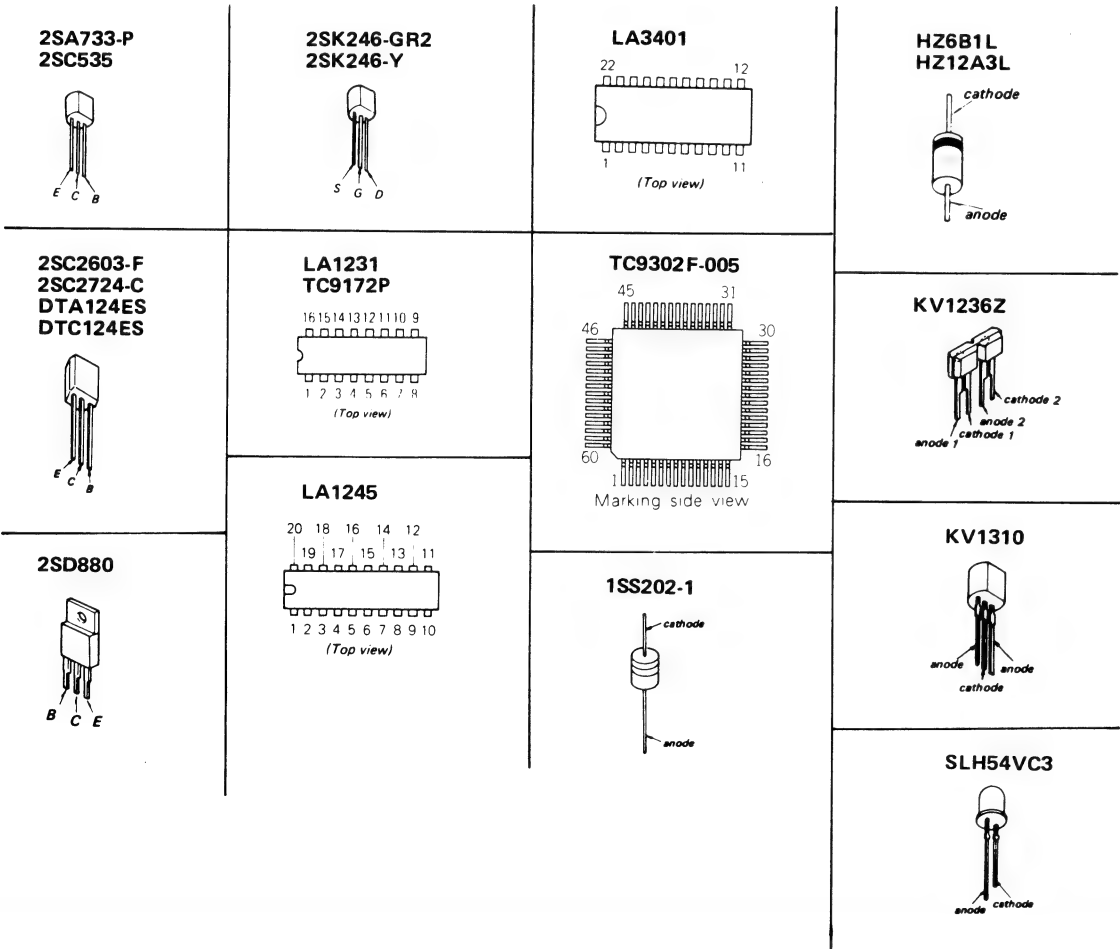




3-3. FM FRONT-END SCHEMATIC DIAGRAM (G-AEP, FRENCH-G-AEP MODEL)



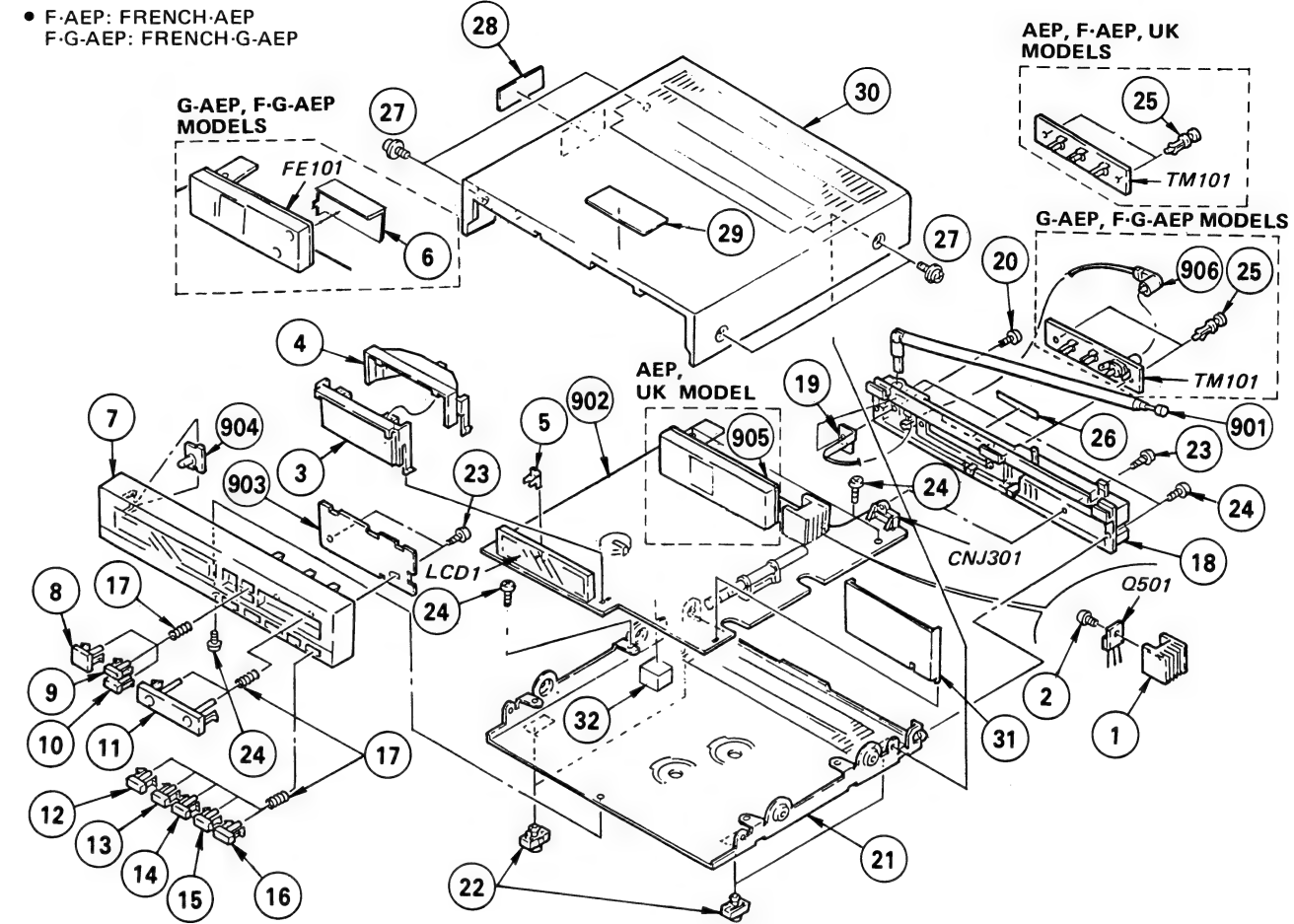
• Semiconductor Lead Layouts



SECTION 4 (AEP, UK model)  
EXPLODED VIEWS AND PARTS LIST

NOTE:  
The mechanical parts with no reference number in the exploded views are not supplied.  
Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.  
The construction parts of an assembled part are indicated with a collation number in the remark column.

- F-AEP: FRENCH-AEP  
F-G-AEP: FRENCH-G-AEP



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT		26	*4-910-084-01	(AEP, F-G-AEP, UK)...LABEL, ANTENNA	
2	7-685-646-81	SCREW +BVTT 3X8 TYPE2		27	4-910-085-01	(G-AEP, F-G-AEP)...LABEL, ANTENNA	
3	*4-909-633-01	ILLUMINATOR			4-886-821-21	SCREW, M3 CASE STOPPER	
4	*4-904-515-01	HOUSE, LAMP		28	*4-914-318-01	(AEP, UK)...LABEL, MODEL NUMBER	
5	*4-904-507-01	BLIND, LAMP			*4-914-313-01	(F-AEP, F-G-AEP)...LABEL, MODEL NUMBER	
6	*4-910-359-01	PLATE, SHIELD			*4-914-365-01	(G-AEP)...LABEL, MODEL NUMBER	
7	X-4910-084-1	PANEL ASSY, FRONT		29	4-884-927-00	LABEL (SYSTEM), CAUTION	
8	4-910-093-11	BUTTON, SQUARE (BAND)		30	X-4902-904-1	CASE ASSY	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)		31	*4-910-090-01	PLATE, SHIELD	
10	4-910-087-71	BUTTON (B), SQUARE (MEMORY)		32	9-911-842-XX	CUSHION (F)	
11	4-910-094-11	BUTTON, SQUARE (TUNING)		901	1-501-321-11	ANTENNA, TELESCOPIC	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)		902	*A-4351-529-A	(AEP, F-AEP, UK)...MOUNTED PCB, TUNER	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)			*A-4351-530-A	(G-AEP, F-G-AEP)...MOUNTED PCB, TUNER	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)		903	*1-615-524-11	PC BOARD, TACT	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)		904	*1-615-525-11	PC BOARD, LED	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)		905	*1-615-526-11	(AEP, F-AEP, UK)...PC BOARD, F.E	
17	4-886-032-00	SPRING, COMPRESSION		906	*1-562-908-11	(G-AEP, F-G-AEP)...CONNECTOR, FEMALE (NO SHIELD)	
18	4-910-098-01	PLATE, JACK		CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA		FE101	1-463-611-11	(G-AEP, F-G-AEP)...FRONT END, FM (FEE-4013A)	
20	7-682-548-09	SCREW +B 3X8		LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
21	*4-902-941-21	CHASSIS		Q501	8-729-288-02	TRANSISTOR 2SD880	
22	X-4902-937-1	FOOT ASSY, RUBBER		TM101	1-536-733-00	(G-AEP, F-G-AEP)...TERMINAL BOARD, ANTENNA	
23	7-685-646-71	SCREW +BVTT 3X8 TYPE2 N-S		TM101	1-536-901-11	(AEP, F-AEP, UK)...TERMINAL BOARD 3P, ANTENNA	
24	7-685-871-01	SCREW +BVTT 3X6 (S)					
25	4-829-039-00	RIVET, NYLON					

NOTE:  
Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.  
The construction parts of an assembled part are indicated with a collation number in the remark column.

- F-AEP: FRENCH-AEP  
F-G-AEP: FRENCH-G-AEP

Ref.No.	Part No.	Description
901	1-501-321-11	ANTENNA, TELESCOPIC
902	*A-4351-529-A	(AEP, F-AEP, UK)...MOUNTED PCB, TUNER
	*A-4351-530-A	(G-AEP, F-G-AEP)...MOUNTED PCB, TUNER
903	*1-615-524-11	PC BOARD, TACT
904	*1-615-525-11	PC BOARD, LED
905	*1-615-526-11	(AEP, F-AEP, UK)...PC BOARD, F.E
906	*1-562-908-11	(G-AEP, F-G-AEP)...CONNECTOR, FEMALE (NO SHIELD)
BA601	1-562-479-12	SOCKET, CONNECTOR 10P
C102	1-806-874-11	INDICATOR, L-CRYSTAL LT5056
C103	1-536-733-00	(G-AEP, F-G-AEP)...TERMINAL BOARD, ANTENNA
C104	1-536-901-11	(AEP, F-AEP, UK)...TERMINAL BOARD 3P, ANTENNA
C105	1-501-321-11	ANTENNA, TELESCOPIC
C106	1-501-321-11	ANTENNA, TELESCOPIC
C107	1-501-321-11	ANTENNA, TELESCOPIC
C108	1-501-321-11	ANTENNA, TELESCOPIC
C109	1-501-321-11	ANTENNA, TELESCOPIC
C110	1-501-321-11	ANTENNA, TELESCOPIC
C111	1-501-321-11	ANTENNA, TELESCOPIC
C112	1-501-321-11	ANTENNA, TELESCOPIC
C113	1-501-321-11	ANTENNA, TELESCOPIC
C114	1-501-321-11	ANTENNA, TELESCOPIC
C115	1-501-321-11	ANTENNA, TELESCOPIC
C116	1-501-321-11	ANTENNA, TELESCOPIC
C117	1-501-321-11	ANTENNA, TELESCOPIC
C118	1-501-321-11	ANTENNA, TELESCOPIC
C119	1-501-321-11	ANTENNA, TELESCOPIC
C201	1-501-321-11	ANTENNA, TELESCOPIC
C202	1-501-321-11	ANTENNA, TELESCOPIC
C203	1-501-321-11	ANTENNA, TELESCOPIC
C204	1-501-321-11	ANTENNA, TELESCOPIC
C205	1-501-321-11	ANTENNA, TELESCOPIC
C206	1-501-321-11	ANTENNA, TELESCOPIC
C207	1-501-321-11	ANTENNA, TELESCOPIC
C208	1-501-321-11	ANTENNA, TELESCOPIC
C209	1-501-321-11	ANTENNA, TELESCOPIC
C210	1-501-321-11	ANTENNA, TELESCOPIC
C211	1-501-321-11	ANTENNA, TELESCOPIC
C212	1-501-321-11	ANTENNA, TELESCOPIC
C301	1-501-321-11	ANTENNA, TELESCOPIC
C302	1-501-321-11	ANTENNA, TELESCOPIC
C303	1-501-321-11	ANTENNA, TELESCOPIC
C304	1-501-321-11	ANTENNA, TELESCOPIC
C305	1-501-321-11	ANTENNA, TELESCOPIC



# SECTION 4 (AEP, UK model) EXPLODED VIEWS AND PARTS LIST

**FH-150R**  
**ST-177R**

**FH-150R**  
**ST-177R**

(AEP, UK model)

# SECTION 5 ELECTRICAL PARTS LIST

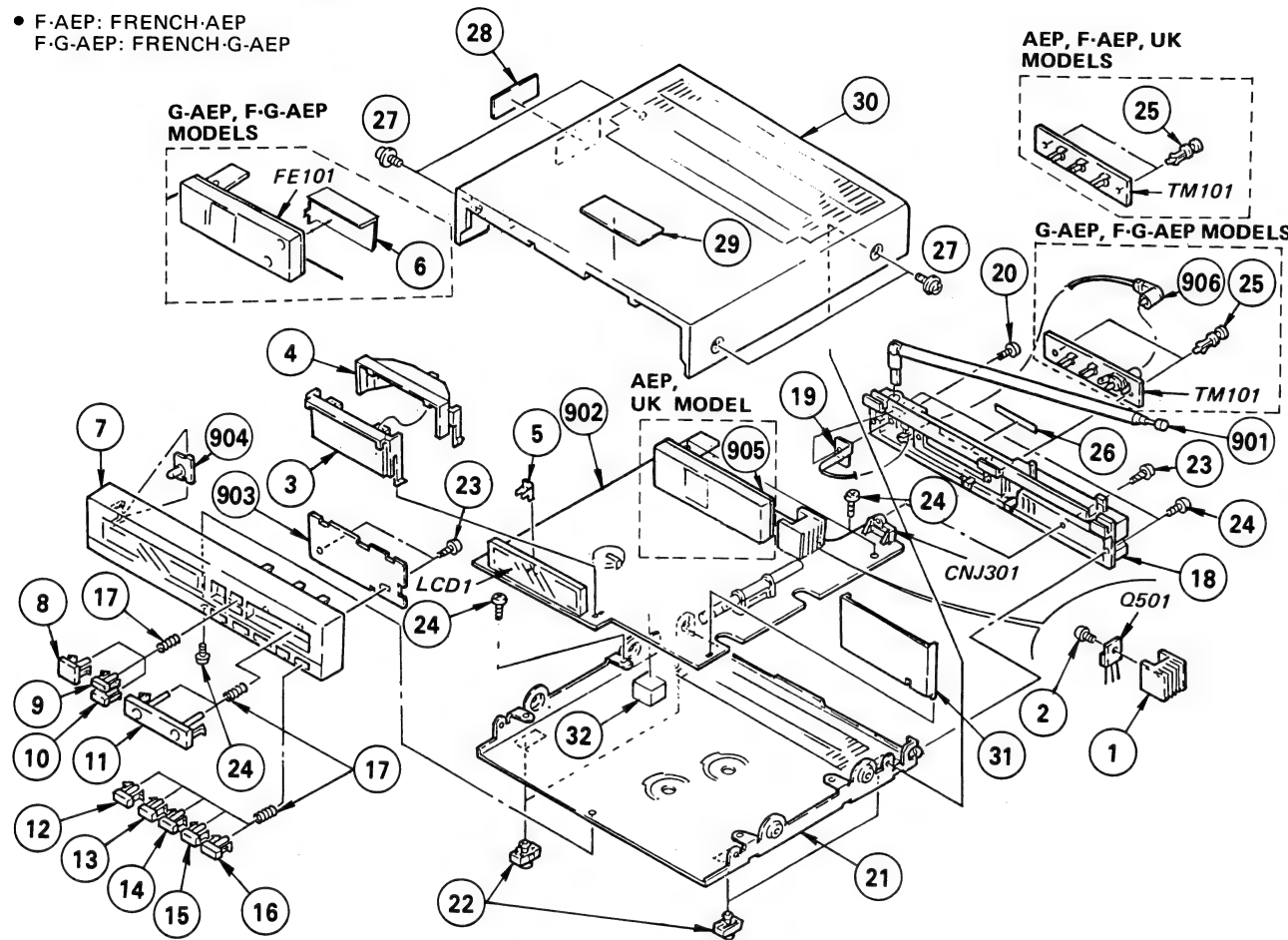
## NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- F-AEP: FRENCH-AEP  
F-G-AEP: FRENCH-G-AEP

The construction parts of an assembled part are indicated with a collation number in the remark column.



No.	Part No.	Description	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT	
2	7-685-646-81	SCREW +BVTT 3X8 TYPE2	
3	*4-909-633-01	ILLUMINATOR	
4	*4-904-515-01	HOUSE, LAMP	
5	*4-904-507-01	BLIND, LAMP	
6	*4-910-359-01	PLATE, SHIELD	
7	X-4910-084-1	PANEL ASSY, FRONT	
8	4-910-093-11	BUTTON, SQUARE (BAND)	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)	
10	4-910-087-71	BUTTON (B), SQUARE (MEMORY)	
11	4-910-094-11	BUTTON, SQUARE (TUNING)	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)	
17	4-886-032-00	SPRING, COMPRESSION	
18	4-910-098-01	PLATE, JACK	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA	
20	7-682-548-09	SCREW +B 3X8	
21	*4-902-941-21	CHASSIS	
22	X-4902-937-1	FOOT ASSY, RUBBER	
23	7-685-646-71	SCREW +BVTT 3X8 TYPE2 N-S	
24	7-685-871-01	SCREW +BVTT 3X6 (S)	
25	4-829-039-00	RIVET, NYLON	

No.	Part No.	Description	Remarks
26	*4-910-084-01	(AEP,F-G-AEP,UK)...LABEL, ANTENNA	
27	4-886-821-21	SCREW, M3 CASE STOPPER	
28	*4-914-318-01	(AEP,UK)...LABEL, MODEL NUMBER	
	*4-914-313-01	(F-AEP,F-G-AEP)...LABEL, MODEL NUMBER	
	*4-914-365-01	(G-AEP)...LABEL, MODEL NUMBER	
29	4-884-927-00	LABEL (SYSTEM), CAUTION	
30	X-4902-904-1	CASE ASSY	
31	*4-910-090-01	PLATE, SHIELD	
32	9-911-842-XX	CUSHION (F)	
901	1-501-321-11	ANTENNA, TELESCOPIC	
902	*A-4351-529-A	(AEP,F-AEP,UK)...MOUNTED PCB, TUNER	
	*A-4351-530-A	(G-AEP,F-G-AEP)...MOUNTED PCB, TUNER	
903	*1-615-524-11	PC BOARD, TACT	
904	*1-615-525-11	PC BOARD, LED	
905	*1-615-526-11	(AEP,F-AEP,UK)...PC BOARD, F.E	
906	*1-562-908-11	(G-AEP,F-G-AEP)...CONNECTOR, FEMALE (NO SHIELD)	
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
FE101	1-463-611-11	(G-AEP,F-G-AEP)...FRONT END, FM (FEE-4013A)	
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
Q501	8-729-288-02	TRANSISTOR 2SD880	
TM101	1-536-733-00	(G-AEP,F-G-AEP)...TERMINAL BOARD, ANTENNA	
TM101	1-536-901-11	(AEP,F-AEP,UK)...TERMINAL BOARD 3P, ANTENNA	

## NOTE:

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

- F-AEP: FRENCH-AEP  
F-G-AEP: FRENCH-G-AEP

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	1-501-321-11	ANTENNA, TELESCOPIC
902	*A-4351-529-A	(AEP,F-AEP,UK)...MOUNTED PCB, TUNER
	*A-4351-439-A	(G-AEP,F-G-AEP)...MOUNTED PCB, TUNER
903	*1-615-524-11	PC BOARD, TACT
904	*1-615-525-11	PC BOARD, LED
905	*1-615-526-11	(AEP,F-AEP,UK)...PC BOARD, F.E
906	*1-562-908-11	(G-AEP,F-G-AEP)...CONNECTOR, FEMALE (NO SHIELD)
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)
C102	1-162-198-31	(AEP,F-AEP,UK)...CERAMIC 8.2PF 10% 50V
C103	1-162-193-31	(AEP,F-AEP,UK)...CERAMIC 3.3PF 10% 50V
C104	1-162-306-31	(AEP,F-AEP,UK)...CERAMIC 0.01MF 20% 16V
C105	1-162-306-31	(AEP,F-AEP,UK)...CERAMIC 0.01MF 20% 16V
C106	1-162-199-31	(AEP,F-AEP,UK)...CERAMIC 10PF 5% 50V
C107	1-162-191-31	(AEP,F-AEP,UK)...CERAMIC 2.2PF 10% 50V
C108	1-162-203-31	(AEP,F-AEP,UK)...CERAMIC 15PF 5% 50V
C109	1-162-286-31	(AEP,F-AEP,UK)...CERAMIC 220PF 10% 50V
C110	1-162-187-31	(AEP,F-AEP,UK)...CERAMIC 1PF 10% 50V
C111	1-162-306-31	(AEP,F-AEP,UK)...CERAMIC 0.01MF 20% 16V
C112	1-162-211-31	(AEP,F-AEP,UK)...CERAMIC 33PF 5% 50V
C113	1-162-203-31	(AEP,F-AEP,UK)...CERAMIC 15PF 5% 50V
C114	1-162-198-31	(AEP,F-AEP,UK)...CERAMIC 8.2PF 10% 50V
C115	1-162-196-31	(AEP,F-AEP,UK)...CERAMIC 5.6PF 10% 50V
C116	1-162-191-31	(AEP,F-AEP,UK)...CERAMIC 2.2PF 10% 50V
C117	1-162-306-31	CERAMIC 0.01MF 20% 16V
C118	1-123-332-00	ELECT 47MF 20% 25V
C119	1-101-005-00	CERAMIC 0.022MF 50V
C201	1-101-005-00	CERAMIC 0.022MF 50V
C202	1-101-005-00	CERAMIC 0.022MF 50V
C203	1-101-005-00	CERAMIC 0.022MF 50V
C204	1-162-211-31	(AEP,F-AEP,UK)...CERAMIC 33PF 5% 50V
C204	1-162-290-31	(G-AEP,F-G-AEP)...CERAMIC 470PF 10% 50V
C205	1-123-380-00	ELECT 1MF 20% 50V
C206	1-101-005-00	CERAMIC 0.022MF 50V
C207	1-123-332-00	ELECT 47MF 20% 16V
C208	1-101-005-00	CERAMIC 0.022MF 50V
C209	1-101-005-00	CERAMIC 0.022MF 50V
C210	1-101-005-00	CERAMIC 0.022MF 50V
C211	1-101-005-00	CERAMIC 0.022MF 50V
C212	1-123-380-00	ELECT 1MF 20% 50V
C301	1-123-332-00	ELECT 47MF 20% 16V
C302	1-123-380-00	ELECT 1MF 20% 50V
C303	1-123-379-00	ELECT 0.47MF 20% 50V
C304	1-123-380-00	ELECT 1MF 20% 50V
C305	1-123-380-00	ELECT 1MF 20% 50V

## CAPACITORS:

MF:μF, PF:μF.

## RESISTORS

All resistors are in ohms.

F : nonflammable

## COILS

MMH : mH, UH : μH

## SEMICONDUCTORS

In each case, U : μ, for example:

UA...: μA..., UPA...: μPA..., UPC...: μPC,

UPD...: μPD...

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
C306	1-123-356-00	ELECT 10MF 20% 50V
C307	1-123-356-00	ELECT 10MF 20% 50V
C308	1-123-356-00	ELECT 10MF 20% 50V
C309	1-162-294-31	CERAMIC 0.001MF 10% 50V
C310	1-162-294-31	CERAMIC 0.001MF 10% 50V
C311	1-123-380-00	ELECT 1MF 20% 50V
C312	1-123-380-00	ELECT 1MF 20% 50V
C313	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C314	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C315	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C316	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C317	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C318	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C319	1-130-491-00	MYLAR 0.047MF 5% 50V
C320	1-101-005-00	CERAMIC 0.022MF 50V
C401	1-162-294-31	CERAMIC 0.001MF 10% 50V
C402	1-101-005-00	CERAMIC 0.022MF 50V
C403	1-123-356-00	ELECT 10MF 20% 50V
C404	1-101-005-00	CERAMIC 0.022MF 50V
C405	1-101-005-00	CERAMIC 0.022MF 50V
C407	1-162-215-31	CERAMIC 47PF 5% 50V
C408	1-161-494-00	CERAMIC 0.022MF 30% 25V
C409	1-162-294-31	CERAMIC 0.001MF 10% 50V
C410	1-130-487-00	MYLAR 0.022MF 5% 50V
C411	1-101-005-00	CERAMIC 0.022MF 50V
C412	1-101-005-00	CERAMIC 0.022MF 50V
C413	1-162-306-31	CERAMIC 0.01MF 20% 16V
C414	1-101-005-00	CERAMIC 0.022MF 50V
C415	1-123-379-00	ELECT 0.47MF 20% 50V
C416	1-123-332-00	ELECT 47MF 20% 16V
C417	1-123-382-00	ELECT 3.3MF 20% 50V
C418	1-123-369-00	ELECT 4.7MF 20% 50V
C419	1-123-382-00	ELECT 3.3MF 20% 50V
C420	1-101-005-00	CERAMIC 0.022MF 50V
C421	1-162-306-31	CERAMIC 0.01MF 20% 16V
C422	1-161-494-00	CERAMIC 0.022MF 30% 25V
C423	1-101-005-00	CERAMIC 0.022MF 50V
C424	1-102-949-00	CERAMIC 12PF 5% 50V
C425	1-102-880-00	CERAMIC 15PF 5% 50V
C426	1-104-069-00	POLYSTYRENE 470PF 5% 50V
C428	1-102-701-00	CERAMIC 91PF 5% 50V
C429	1-103-707-00	STYROL 180PF 5% 50V
C430	1-101-005-00	CERAMIC 0.022MF 50V
C431	1-102-966-00	CERAMIC 43PF 5% 50V
C432	1-162-303-31	CERAMIC 0.0033MF 20% 16V



(AEP, UK model)

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
C433	1-161-494-00	CERAMIC	0.022MF	30%	25V
C434	1-101-005-00	CERAMIC	0.022MF		50V
C501	1-101-005-00	CERAMIC	0.022MF		50V
C502	1-123-333-00	ELECT	100MF	20%	16V
C503	1-101-005-00	CERAMIC	0.022MF		50V
C504	1-123-307-00	ELECT	100MF	20%	10V
C505	1-101-005-00	CERAMIC	0.022MF		50V
C506	1-101-005-00	CERAMIC	0.022MF		50V
C601	1-101-005-00	CERAMIC	0.022MF		50V
C602	1-123-307-00	ELECT	100MF	20%	10V
C603	1-102-852-00	CERAMIC	47PF	5%	50V
C604	1-102-852-00	CERAMIC	47PF	5%	50V
C605	1-123-380-00	ELECT	1MF	20%	50V
C606	1-101-005-00	CERAMIC	0.022MF		50V
C607	1-162-306-31	CERAMIC	0.01MF	20%	16V
C608	1-101-005-00	CERAMIC	0.022MF		50V
C609	1-123-356-00	ELECT	10MF	20%	50V
C610	1-101-005-00	CERAMIC	0.022MF		50V
C611	1-123-332-00	ELECT	47MF	20%	16V
C612	1-136-171-00	FILM	0.33MF	5%	50V
C613	1-130-487-00	MYLAR	0.022MF	5%	50V
C614	1-123-609-00	ELECT	0.33MF	20%	50V
C615	1-136-171-00	FILM	0.33MF	5%	50V
C616	1-130-487-00	MYLAR	0.022MF	5%	50V
C617	1-123-609-00	ELECT	0.33MF	20%	50V
C630	1-162-294-31	CERAMIC	0.001	10%	50V
C631	1-101-005-00	CERAMIC	0.022MF		50V
CF201	1-527-968-00	FILTER, CERAMIC			
CF202	1-527-968-00	FILTER, CERAMIC			
CF203	1-527-968-00	(G-AEP,F·G-AEP)...FILTER, CERAMIC			
CF401	1-527-937-00	FILTER, CERAMIC			
CF402	1-527-981-00	FILTER, CERAMIC			
CNJ101	*1-562-327-00	(AEP,F·AEP,UK)...SOCKET, CONNECTOR 3P			
CNJ201	*1-560-060-00	PIN, CONNECTOR 2P (NULL CHECK POINT)			
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P			
CNJ601	*1-560-604-00	PIN, CONNECTOR 5P			
CNJ602	*1-560-602-00	PIN, CONNECTOR 3P			
CNJ603	*1-560-603-00	PIN, CONNECTOR 4P			
CT401	1-141-227-00	CAP, CERAMIC TRIMMER			
CT402	1-141-227-00	CAP, CERAMIC TRIMMER			
CT403	1-141-227-00	CAP, CERAMIC TRIMMER			
CT404	1-141-227-00	CAP, CERAMIC TRIMMER			
D101	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D102	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D103	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D105	8-719-107-94	(AEP,G-AEP,UK)...DIODE 1SS202-1			
D201	8-719-107-94	DIODE 1SS202-1			
D202	8-719-107-94	DIODE 1SS202-1			
D301	8-719-904-08	DIODE SLH54VC3			
D302	8-719-107-94	DIODE 1SS202-1			
D303	8-719-107-94	DIODE 1SS202-1			
D304	8-719-107-94	DIODE 1SS202-1			
D401	8-719-107-94	DIODE 1SS202-1			
D402	8-719-902-79	DIODE KV1236Z			
D403	8-719-902-79	DIODE KV1236Z			
D422	8-719-107-94	DIODE 1SS202-1			
D501	8-719-910-23	DIODE HZ12A3L			
D502	8-719-910-64	DIODE HZ6B1L			
D601	8-719-107-94	DIODE 1SS202-1			

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description
D602	8-719-107-94	DIODE 1SS202-1
D603	8-719-107-94	DIODE 1SS202-1
D604	8-719-107-94	DIODE 1SS202-1
D605	8-719-107-94	DIODE 1SS202-1
D606	8-719-107-94	DIODE 1SS202-1
D607	8-719-107-94	DIODE 1SS202-1
D608	8-719-107-94	DIODE 1SS202-1
D609	8-719-107-94	DIODE 1SS202-1
D610	8-719-107-94	DIODE 1SS202-1
D611	8-719-107-94	DIODE 1SS202-1
D612	8-719-107-94	DIODE 1SS202-1
D613	8-719-107-94	DIODE 1SS202-1
D615	8-719-107-94	DIODE 1SS202-1
D616	8-719-107-94	DIODE 1SS202-1
D617	8-719-107-94	DIODE 1SS202-1
FE101	1-463-611-11	(G-AEP,F·G-AEP)...FRONT END, FM (FEE-4013A)
FL201	1-235-126-00	ENCAPSULATED COMPONENT
IC201	8-759-812-31	IC LA1231
IC301	8-759-801-80	IC LA3401
IC401	8-759-812-45	IC LA1245
IC601	8-759-204-24	IC TC9302F-005
IC602	8-759-202-63	IC TC9172P
L101	*1-422-214-11	(AEP,F·AEP,UK)...COIL, AIR-CORE
L102	*1-422-040-00	(AEP,F·AEP,UK)...COIL, AIR-CORE
L103	*1-422-081-00	(AEP,F·AEP,UK)...COIL (WITH CORE)
L104	*1-422-039-00	(AEP,F·AEP,UK)...COIL, AIR-CORE
L105	*1-459-396-00	(AEP,F·AEP,UK)...COIL (WITH CORE)
L301	1-408-924-00	MICRO INDUCTOR 10MMH
L302	1-408-924-00	MICRO INDUCTOR 10MMH
L401	1-402-151-11	ANTENNA, FERRITE-ROD (LW/MW)
L402	1-406-089-11	COIL (OSC)
L403	1-406-090-11	COIL (OSC)
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056
PL501	1-518-511-21	LAMP, PILOT, YELLOW
Q101	8-729-353-52	(AEP,G-AEP,UK)...TRANSISTOR 2SC535
Q102	8-729-353-52	(AEP,G-AEP,UK)...TRANSISTOR 2SC535
Q103	8-729-672-42	(AEP,G-AEP,UK)...TRANSISTOR 2SC2724-C
Q104	8-729-672-42	(AEP,G-AEP,UK)...TRANSISTOR 2SC2724-C
Q201	8-729-672-42	TRANSISTOR 2SC2724-C
Q301	8-729-606-33	TRANSISTOR 2SC2603-F
Q302	8-729-606-33	TRANSISTOR 2SC2603-F
Q303	8-729-900-63	TRANSISTOR DTA124ES
Q304	8-729-900-36	TRANSISTOR DTC124ES
Q305	8-729-900-36	TRANSISTOR DTC124ES
Q401	8-729-606-33	TRANSISTOR 2SC2603-F
Q402	8-729-606-33	TRANSISTOR 2SC2603-F
Q403	8-729-606-33	TRANSISTOR 2SC2603-F
Q404	8-729-606-33	TRANSISTOR 2SC2603-F
Q405	8-729-173-37	TRANSISTOR 2SA733-P
Q406	8-729-606-33	TRANSISTOR 2SC2603-F
Q407	8-729-606-33	TRANSISTOR 2SC2603-F
Q501	8-729-288-02	TRANSISTOR 2SD880
Q502	8-729-224-61	TRANSISTOR 2SK246-Y
Q601	8-729-201-56	TRANSISTOR 2SK246-GR2
Q602	8-729-606-33	TRANSISTOR 2SC2603-F
Q603	8-729-201-56	TRANSISTOR 2SK246-GR2

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q604	8-729-606-33	TRANSISTOR 2SC2603-F			
Q605	8-729-900-36	TRANSISTOR DTC124ES			
Q606	8-729-900-63	TRANSISTOR DTA124ES			
Q607	8-729-900-63	TRANSISTOR DTA124ES			
Q608	8-729-900-36	TRANSISTOR DTC124ES			
Q609	8-729-900-63	TRANSISTOR DTA124ES			
Q610	8-729-900-36	TRANSISTOR DTC124ES			
Q611	8-729-900-63	TRANSISTOR DTA124ES			
Q614	8-729-606-33	TRANSISTOR 2SC2603-F			
Q615	8-729-900-36	TRANSISTOR DTC124ES			
R101	1-249-441-11	(AEP,F·AEP,UK)...CARBON	100K	5%	1/6W
R102	1-247-901-00	(AEP,F·AEP,UK)...CARBON	820K	5%	1/6W
R103	1-249-405-00	(AEP,F·AEP,UK)...CARBON	100	5%	1/6W
R104	1-249-405-00	(AEP,F·AEP,UK)...CARBON	100	5%	1/6W
R105	1-249-441-11	(AEP,F·AEP,UK)...CARBON	100K	5%	1/6W
R106	1-247-901-00	(AEP,F·AEP,UK)...CARBON	820K	5%	1/6W
R107	1-247-819-00	(AEP,F·AEP,UK)...CARBON	330	5%	1/6W
R108	1-247-795-00	(AEP,F·AEP,UK)...CARBON	33	5%	1/6W
R108	1-249-405-00	(G·AEP,F·G·AEP)...CARBON	100	5%	1/6W
R109	1-249-405-00	(AEP,F·AEP,UK)...CARBON	100	5%	1/6W
R110	1-247-893-00	(AEP,F·AEP,UK)...CARBON	390K	5%	1/6W
R111	1-249-425-11	(AEP,F·AEP,UK)...CARBON	4.7K	5%	1/6W
R112	1-247-859-00	(AEP,F·AEP,UK)...CARBON	15K	5%	1/6W
R113	1-247-893-00	(AEP,F·AEP,UK)...CARBON	390K	5%	1/6W
R114	1-249-405-00	(AEP,F·AEP,UK)...CARBON	100	5%	1/6W
R115	1-247-799-00	CARBON	47	5%	1/6W
R116	1-247-706-11	(G·AEP,F·G·AEP)...CARBON	330	5%	1/4W
R201	1-247-901-00	CARBON	820K	5%	1/6W
R202	1-247-819-00	CARBON	330	5%	1/6W
R203	1-247-819-00	CARBON	330	5%	1/6W
R204	1-247-873-00	CARBON	56K	5%	1/6W
R205	1-249-417-11	CARBON	1K	5%	1/6W
R206	1-247-859-00	CARBON	15K	5%	1/6W
R207	1-249-433-11	CARBON	22K	5%	1/6W
R208	1-247-799-00	CARBON	47	5%	1/6W
R209	1-247-859-00	CARBON	15K	5%	1/6W
R210	1-249-441-11	CARBON	100K	5%	1/6W
R211	1-249-429-11	CARBON	10K	5%	1/6W
R301	1-247-799-00	CARBON	47	5%	1/6W
R302	1-249-423-11	CARBON	3.3K	5%	1/6W
R303	1-249-435-11	CARBON	33K	5%	1/6W
R304	1-247-833-00	CARBON	1.2K	5%	1/6W
R305	1-249-437-11	CARBON	47K	5%	1/6W
R306	1-249-437-11	CARBON	47K	5%	1/6W
R307	1-249-419-11	CARBON	1.5K	5%	1/6W
R308	1-249-419-11	CARBON	1.5K	5%	1/6W
R309	1-249-429-11	CARBON	10K	5%	1/6W
R310	1-249-429-11	CARBON	10K	5%	1/6W
R312	1-249-437-11	CARBON	47K	5%	1/6W
R313	1-249-417-11	CARBON	1K	5%	1/6W
R314	1-249-437-11	CARBON	47K	5%	1/6W
R316	1-249-437-11	CARBON	47K	5%	1/6W
R319	1-249-437-11	CARBON	47K	5%	1/6W
R320	1-249-437-11	CARBON	47K	5%	1/6W
R322	1-249-437-11	CARBON	47K	5%	1/6W
R330	1-247-853-00	CARBON	8.2K	5%	1/6W
R401	1-249-421-11	CARBON	2.2K	5%	1/6W
R402	1-249-405-00	CARBON	100	5%	1/6W
R403	1-249-414-11	CARBON	560	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R404	1-249-423-11	CARBON	3.3K	5%	1/6W
R405	1-247-799-00	CARBON	47	5%	1/6W
R406	1-249-429-11	CARBON	10K	5%	1/6W
R407	1-249-405-00	CARBON	100	5%	1/6W
R408	1-249-429-11	CARBON	10K	5%	1/6W
R409	1-247-811-00	CARBON	150	5%	1/6W
R410	1-247-857-00	CARBON	12K	5%	1/6W
R411	1-249-429-11	CARBON	10K	5%	1/6W
R413	1-249-433-11	CARBON	22K	5%	1/6W
R414	1-249-429-11	CARBON	10K	5%	1/6W
R415	1-249-429-11	CARBON	10K	5%	1/6W
R418	1-249-433-11	CARBON	22K	5%	1/6W
R419	1-249-429-11	CARBON	10K	5%	1/6W
R420	1-249-429-11	CARBON	10K	5%	1/6W
R421	1-249-433-11	CARBON	22K	5%	1/6W
R422	1-249-429-11	CARBON	10K	5%	1/6W
R423	1-249-433-11	CARBON	22K	5%	1/6W
R432	1-247-903-00	CARBON	1M	5%	1/6W
R433	1-249-429-11	CARBON	10K	5%	1/6W
R434	1-249-429-11	CARBON	10K	5%	1/6W
R435	1-249-429-11	CARBON	10K	5%	1/6W
R436	1-247-819-00	CARBON	330	5%	1/6W
R437	1-249-437-11	CARBON	47K	5%	1/6W
R439	1-249-429-11	CARBON	10K	5%	1/6W
R501	1-247-815-00	CARBON	220	5%	1/6W
R502	1-247-823-00	CARBON	470	5%	1/6W
R503	1-247-775-00	CARBON	4.7	5%	1/6W
R504	1-249-417-11	CARBON	1K	5%	1/6W
R601	1-249-425-11	CARBON	4.7K	5%	1/6W
R602	1-249-441-11	CARBON	100K	5%	1/6W
R603	1-249-435-11	CARBON	33K	5%	1/6W
R604	1-249-423-00	CARBON	3.3K	5%	1/6W
R605	1-249-441-11	CARBON	100K	5%	1/6W
R606	1-247-435-11	CARBON	33K	5%	1/6W
R607	1-247-797-00	CARBON	39	5%	1/6W
R608	1-247-799-00	CARBON	47	5%	1/6W
R609	1-249-437-11	CARBON	47K	5%	1/6W
R610	1-247-817-00	CARBON	270	5%	1/6W
R611	1-247-829-00	CARBON	820	5%	1/6W
R612	1-249-414-11	CARBON	560	5%	1/6W
R613	1-249-435-00	CARBON	33K	5%	1/6W
R614	1-249-421-11	CARBON	2.2K	5%	1/6W
R615	1-249-425-11	CARBON	4.7K	5%	1/6W
R616	1-249-425-11	CARBON	4.7K	5%	1/6W
R617	1-249-437-11	CARBON	47K	5%	1/6W
R618	1-247-817-00	CARBON	270	5%	1/6W
R619	1-247-829-00	CARBON	820	5%	1/6W
R620	1-249-414-11	CARBON	560	5%	1/6W
R621	1-247-885-00	CARBON	180K	5%	1/6W
R622	1-249-421-11	CARBON	2.2K	5%	1/6W
R623	1-249-425-11	CARBON	4.7K	5%	1/6W
R624	1-249-425-11	CARBON	4.7K	5%	1/6W
R625	1-247-891-00	CARBON	330K	5%	1/6W
R640	1-249-435-11	CARBON	33K	5%	1/6W
R643	1-249-441-11	CARBON	100K	5%	1/6W
R644	1-249-425-11	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>
RV201	1-228-997-00	RES, ADJ, CARBON 100K
RV301	1-228-997-00	(AEP,F·AEP,UK)...RES, ADJ, CARBON 100K
RV301	1-228-998-00	(G-AEP,F·G-AEP)..RES, ADJ, CARBON 220K
S701	1-554-303-21	SWITCH, KEY BOARD (BAND)
S702	1-554-303-21	SWITCH, KEY BOARD (STEREO MUTING)
S703	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S704	1-554-303-21	SWITCH, KEY BOARD (TUNING -)
S705	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
S706	1-554-303-21	SWITCH, KEY BOARD (PRESET 1)
S707	1-554-303-21	SWITCH, KEY BOARD (PRESET 2)
S708	1-554-303-21	SWITCH, KEY BOARD (PRESET 3)
S709	1-554-303-21	SWITCH, KEY BOARD (PRESET 4)
S710	1-554-303-21	SWITCH, KEY BOARD (PRESET 5)
T201	1-404-419-00	COIL, DISCRIMINATOR
T401	1-404-535-11	COIL (WITH IFT)
TM101	1-536-733-00	(G-AEP,F·G-AEP) ....TERMINAL BOARD, ANTENNA
TM101	1-536-901-11	(AEP,F·AEP,UK) ....TERMINAL BOARD 3P, ANTENNA
X301	1-567-250-11	OSCILLATOR, CERAMIC
X601	1-567-125-00	VIBRATOR, CRYSTAL

## SECTION 1

### BLOCK DIAGRAM

- ST-2 -

## SECTION 2 ADJUSTMENTS

(E model)

**FH-150R**  
**ST-177R**

**FH-150R**  
**ST-177R**

(E model)

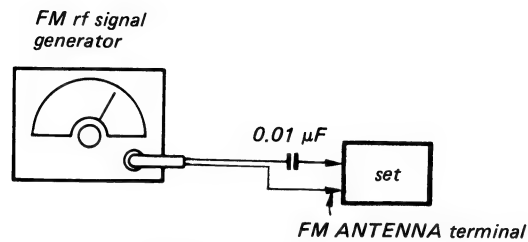
### FM SECTION 1

Setting:

BAND selector switch . . . . FM

#### FM OSC Voltage Adjustment

Setting:

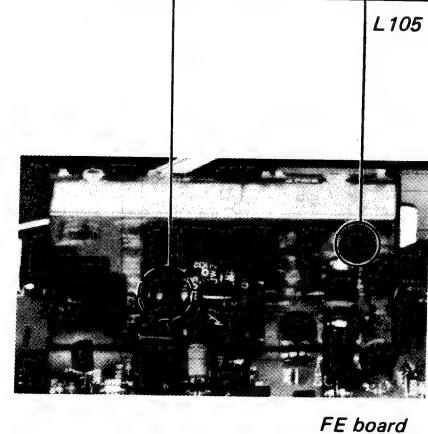
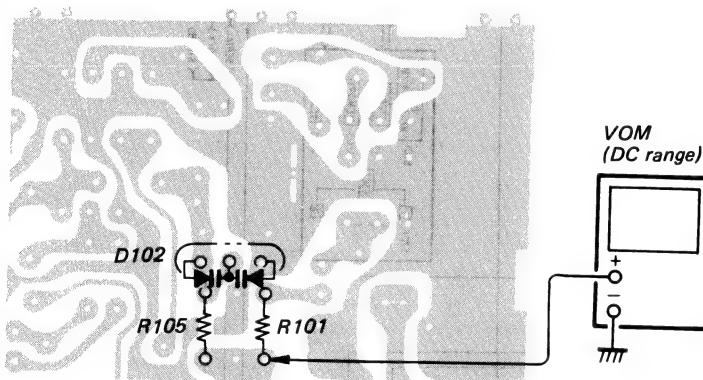


Carrier frequency: 108 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: as low as possible

Procedure:

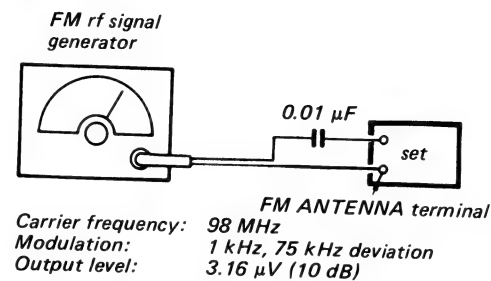
1. Push the TUNING (+, -) button for 108 MHz.
2. Adjust L105 for 8.9 - 9 V reading on the VOM.

[FE BOARD] (CONDUCTOR SIDE)



#### FM Tracking Adjustment

Setting:

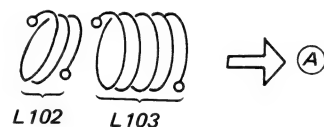


Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: 3.16 μV (10 dB)

Procedure:

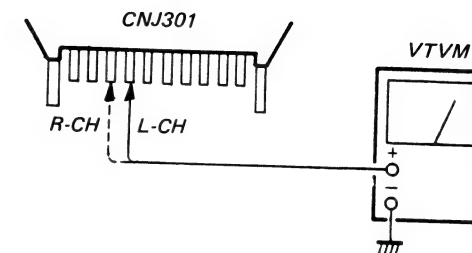
1. Push TUNING (+, -) button for 98 MHz.
2. Approach L102 and L103 not to contact each other.
3. Adjust L101 and L103, and repeat the adjustment 2 - 3 times for maximum VTVM reading.

(Adjust L103 in the direction as shown by arrow A.)

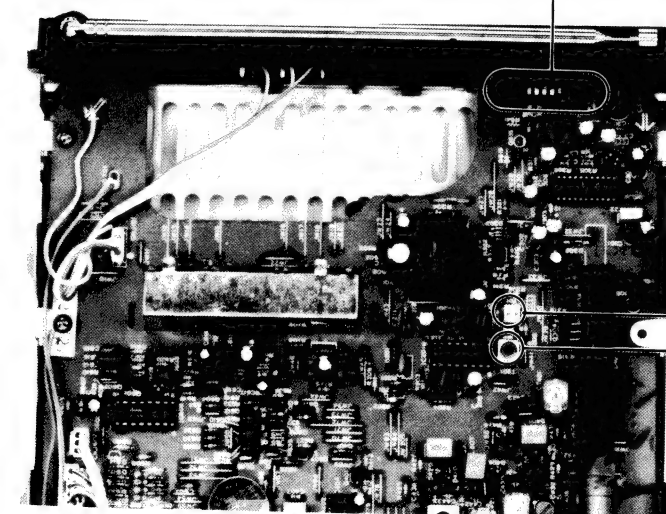


Note: Do not touch L102.

L101  
L102  
L103



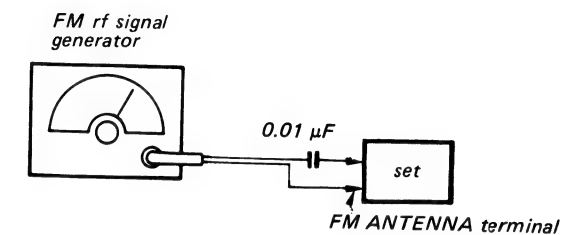
tuner board



Note: FM discriminator alignment should be made after FM tracking adjustment.

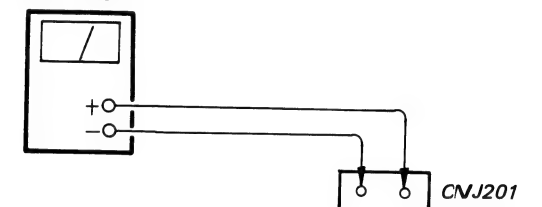
#### FM Discriminator Alignment (NULL Check)

Setting:



Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: 1 mV (60 dB)

VOM  
(DC range)



Procedure:

1. Push the TUNING (+, -) button for 98 MHz.
2. Adjust T201 for 0 V reading on the VOM.

CNJ201

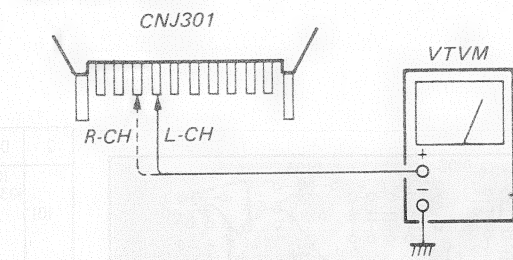
T201



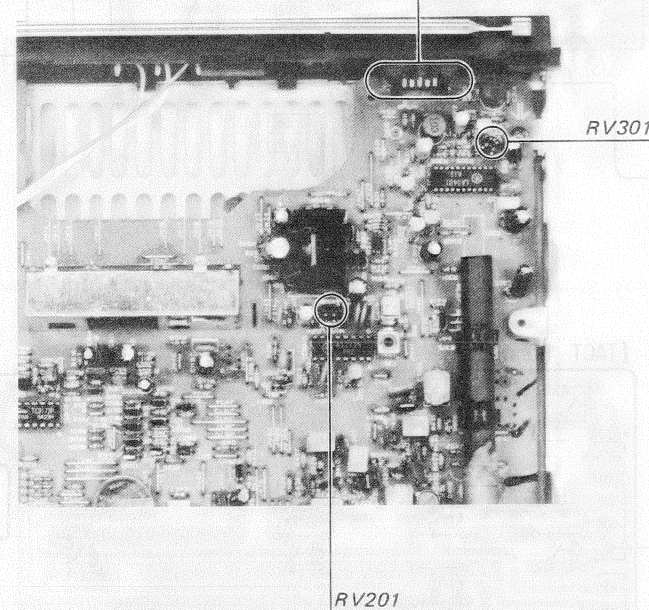
(E model)

**FH-150R**  
**ST-177R****FH-150R**  
**ST-177R**

(E model)

**FM SECTION 2**

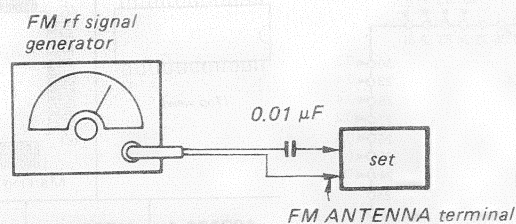
tuner board

**FM Muting Level Adjustment**

Setting:

STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz  
Modulation: 1 kHz, 75 kHz deviation  
Output level: 17.9 μV (25 dB)

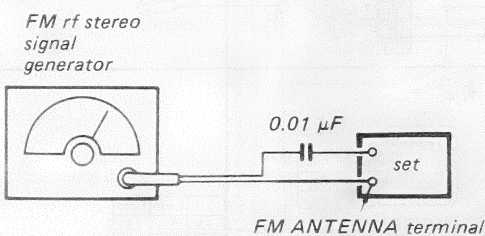
1. Push the TUNING (+, -) button for 98 MHz.
2. Adjust RV201 for a point the VTVM reading just drops to 0 V.

**FM Stereo Separation Adjustment**

Setting:

STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz  
Modulation: audio (1 kHz): 33.75 kHz deviation  
pilot (19 kHz): 7.5 kHz deviation  
sub-channel (38 kHz): 33.75 kHz deviation  
Output level: 1 mV (60 dB)  
Mode: stereo

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	(A)
R-CH	L-CH	(B) Adjust RV301 for minimum reading.
R-CH	R-CH	(C)
L-CH	R-CH	(D) Adjust RV301 for minimum reading.

L-CH Stereo separation: (A) - (B)  
R-CH Stereo separation: (C) - (D)

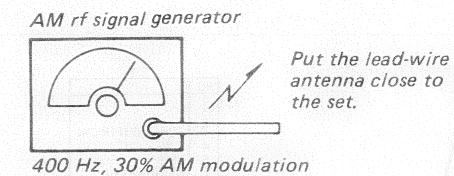
The separations of both channels should be equal.

**AM SECTION**

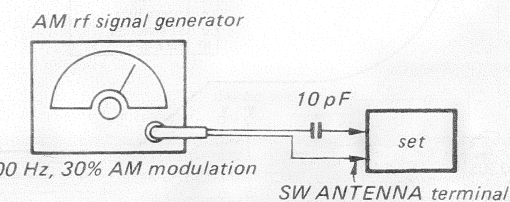
Setting:

BAND selector switch: MW, SW1 or SW2

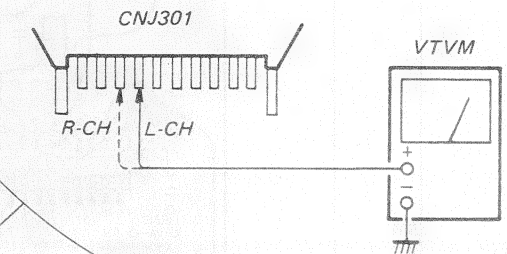
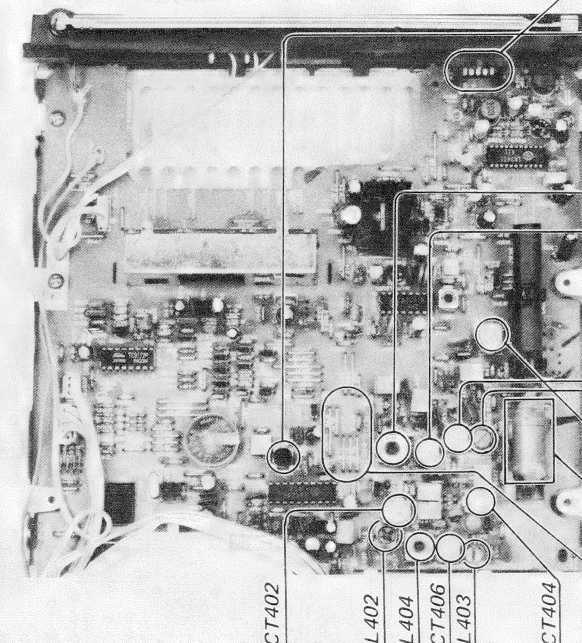
- MW -



- SW -



- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the trimmer capacitors.

**AM IF ALIGNMENT**

Adjust for a maximum reading on VTVM.

T401 450 kHz

**SW2 TRACKING ADJUSTMENT**

Adjust for a maximum reading on VTVM.

L406 10 MHz

CT405 20 MHz

**SW1 TRACKING ADJUSTMENT**

Adjust for a maximum reading on VTVM.

CT403 6.5 MHz

L405 3.5 MHz

**MW TRACKING ADJUSTMENT**

Adjust for a maximum reading on VTVM.

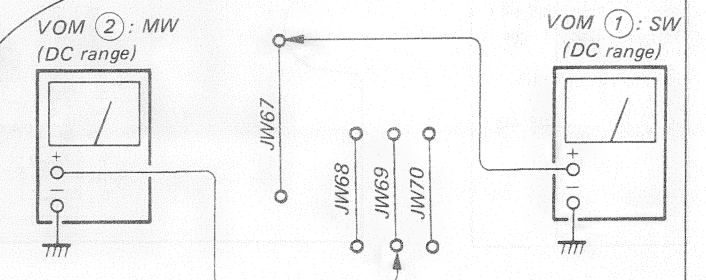
CT401 1,400 kHz

L401 600 kHz

**MW/SW1/SW2 OSC Voltage Adjustment**

Procedure:

1. Set BAND selector switch to MW.
2. Push TUNING (+, -) button for 530 kHz. Adjust L402 for 0.95 - 1.05 V VOM (2) reading.
3. Push the button for 1,610 kHz. Adjust CT402 for 8.9 - 9.0 V VOM (2) reading.
4. Set BAND selector switch to SW1.
5. Push TUNING (+, -) button for 3.2 MHz. Adjust L403 for 0.95 - 1.05 V VOM (1) reading.
6. Push the button for 7.3 MHz. Adjust CT404 for 8.9 - 9.0 V VOM (1) reading.
7. Set BAND selector switch to SW2.



8. Push TUNING (+, -) button for 9.5 MHz. Adjust L404 for 0.95 - 1.05 V VOM (1) reading.
9. Push the button for 21.75 MHz. Adjust CT406 for 8.9 - 9.0 V VOM (1) reading.



### 3-1. MOUNTING DIAGRAM

— Conductor Side —

- See page ST-11 for notes.

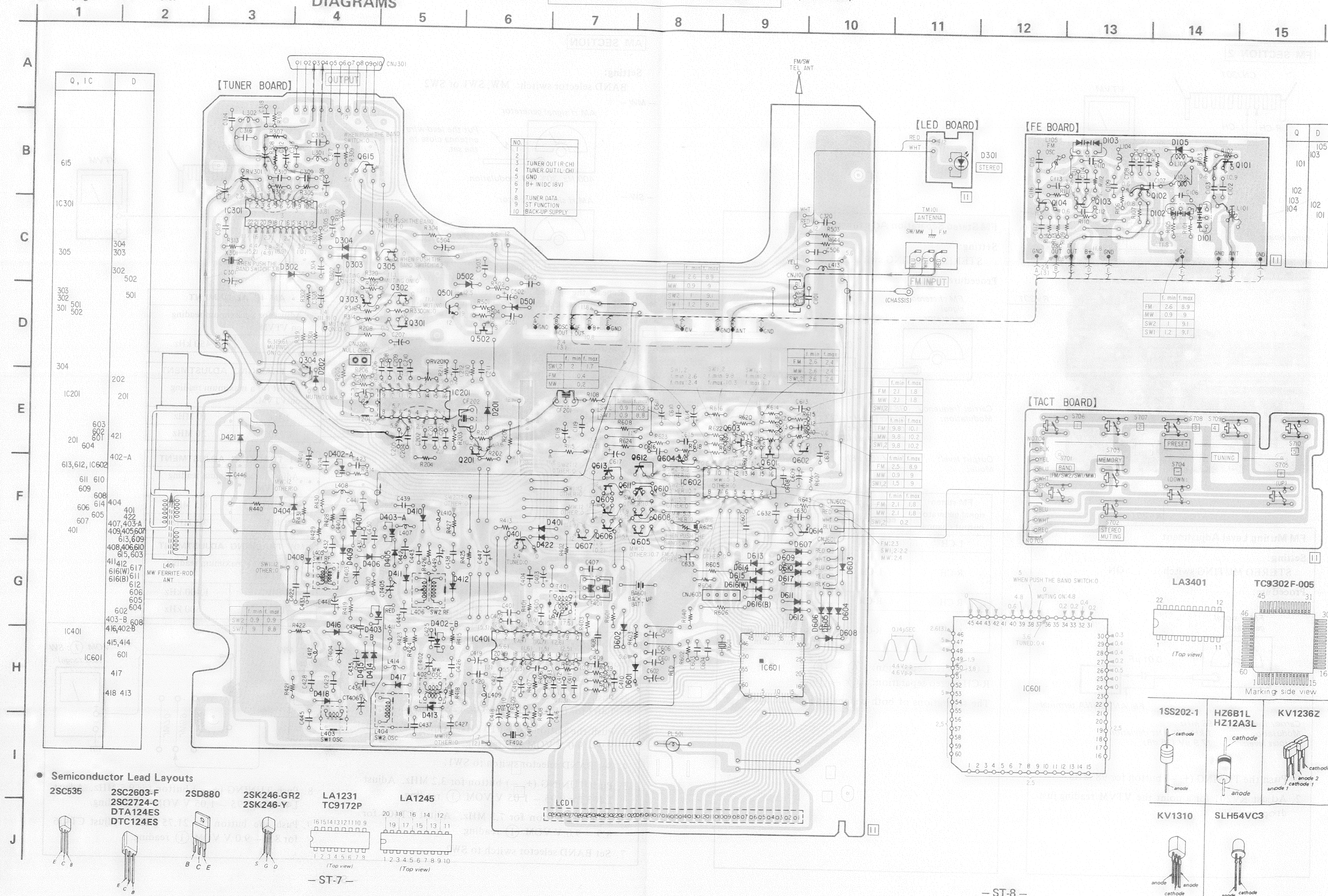
### SECTION 3 DIAGRAMS

(E model)

**FH-150R**  
**ST-177R**

**FH-150R**  
**ST-177R**

(E model)



### Semiconductor Lead Layouts

2SC535

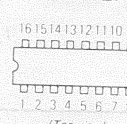
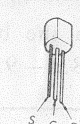
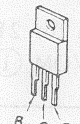
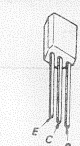
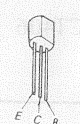
2SC2603-F  
2SC2724-C  
DTA124ES  
DTC124ES

2SD880

2SK246-GR2  
2SK246-Y

LA1231  
TC9172P

LA1245



— ST-7 —

— ST-8 —



# 3-1. MOUNTING DIAGRAM

— Conductor Side —

• See page ST-11 for notes.

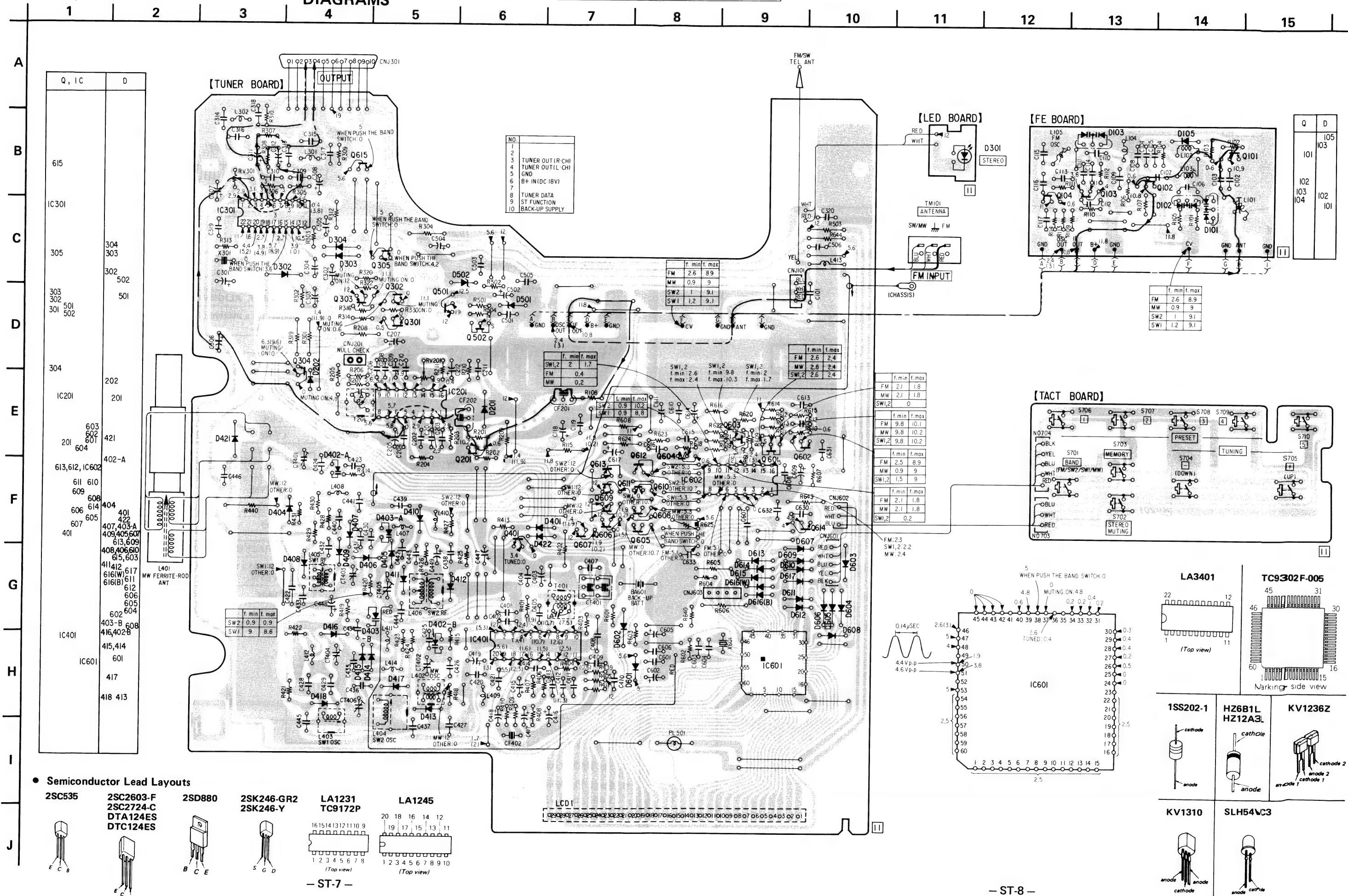
## SECTION 3 DIAGRAMS

(E model)

**FH-150R**  
**ST-177R**

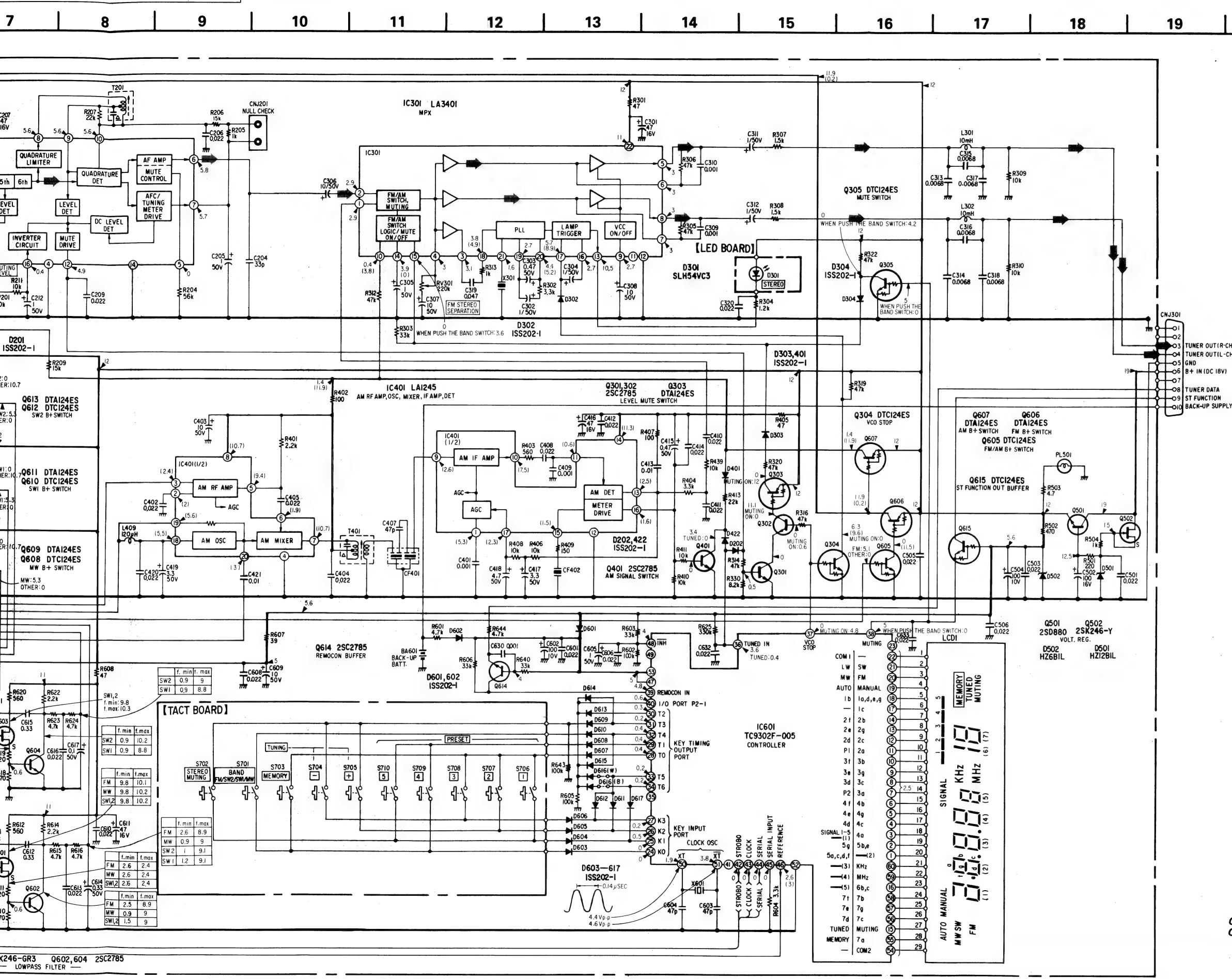
**FH-150R**  
**ST-177R**

(E model)



**(E model)**





**Note on Schematic Diagram:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- $\square$ : signal path.
- $\triangle$ : internal component.
- $\text{---}$ : B+ bus.
- $\square$ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (50  $\text{k}\Omega/\text{V}$ ).  
( ) : FM  
( ) : AM
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in detuned mode by using oscilloscope. Voltage variations may be noted due to normal production tolerances.

**Note on Mounting Diagram:**

- Color code of sleeving over the end of the jacket.

•  $\square$ : indicates side identified with part number.

- $\text{---}$ : signal path
- $\text{---}$ : L-CH signal path
- $\text{---}$ : R-CH signal path
- $\text{---}$ : B+ pattern

\* : When replacing ceramic filters CF201 and CF202, color marking on their bodies should be the same. Connect or remove D616 according to color marking of ceramic filters.

color marking

CF201, 202 color marking	D616
black	D616 (B), connected
red	not connected
white	D616 (W), connected



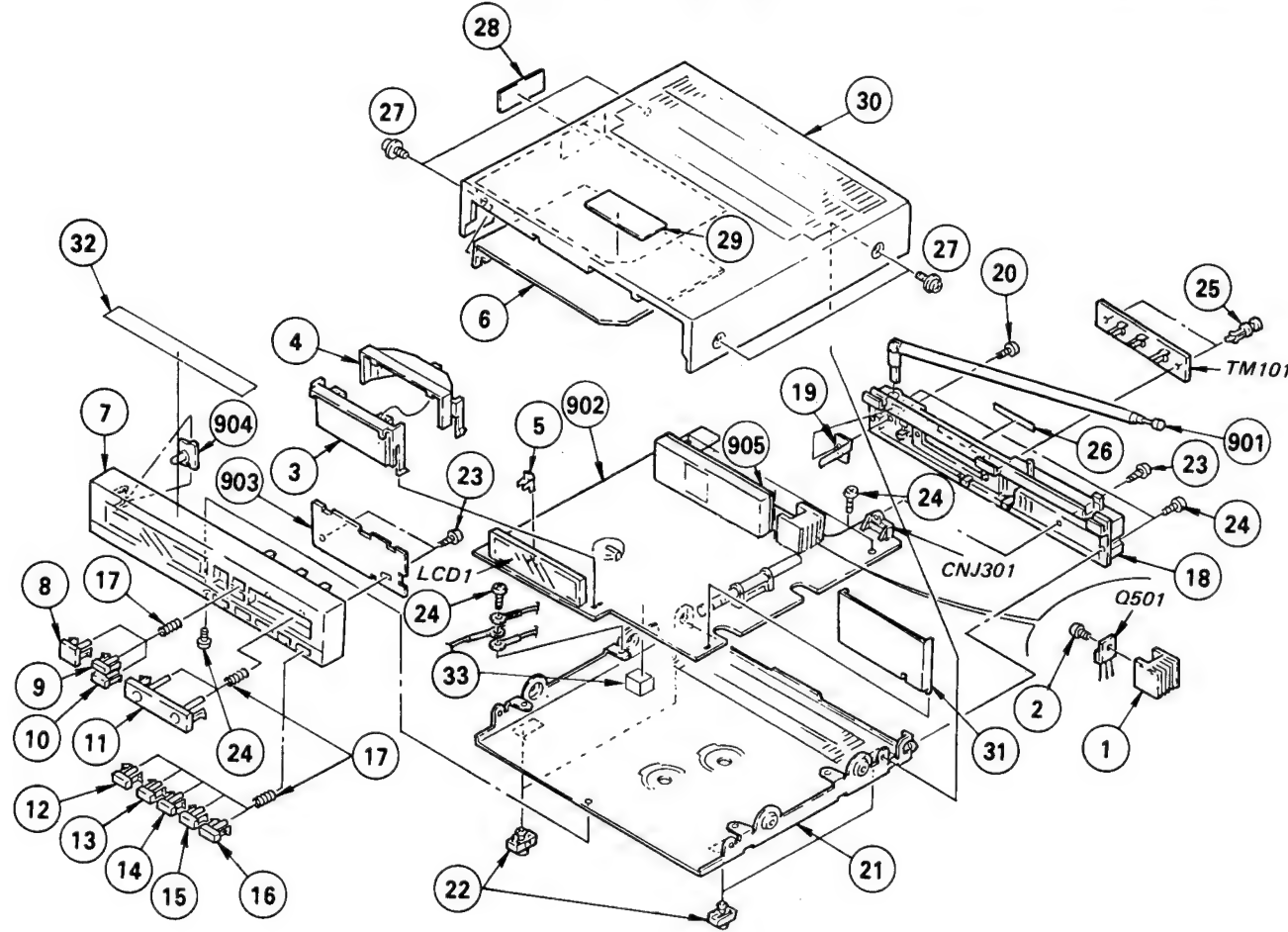
**SECTION 4**

**EXPLODED VIEW AND PARTS LIST**

NOTE:  
The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a collation number in the remark column.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT		22	X-4902-937-1	FOOT ASSY, RUBBER	
2	7-685-646-81	SCREW +BV 3X8 (S)		23	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
3	*4-909-633-01	ILLUMINATOR		24	7-685-871-01	SCREW +BVTT 3X6 (S)	
4	*4-904-515-01	HOUSE, LAMP		25	4-829-039-00	RIVET, NYLON	
5	*4-904-507-01	BLIND, LAMP		26	*4-910-083-01	LABEL, ANTENNA	
6	*4-910-337-01	PLATE, SHIELD		27	4-886-821-21	SCREW, M3 CASE STOPPER	
7	X-4910-083-1	PANEL ASSY, FRONT		28	*4-914-317-01	LABEL, MODEL NUMBER	
8	4-910-093-11	BUTTON, SQUARE (BAND)		29	4-884-927-00	LABEL (SYSTEM), CAUTION	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)		30	X-4902-904-1	CASE ASSY (BLACK)	
10	4-910-087-71	BUTTON (B), SQUARE (MEMORY)		31	*4-910-090-01	PLATE, SHIELD	
11	4-910-094-11	BUTTON, SQUARE (TUNING)		32	4-884-873-00	SEAL, INDICATION, METER BAND	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)		33	9-911-842-XX	CUSHION	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)		901	1-501-321-11	ANTENNA, TELESCOPIC	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)		902	*A-4351-441-A	MOUNTED PCB, TUNER	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)		903	*1-615-520-11	PC BOARD, TACT	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)		904	*1-615-521-11	PC BOARD, LED	
17	4-886-032-00	SPRING, COMPRESSION		905	*1-615-522-11	PC BOARD, F.E	
18	4-910-098-01	PLATE, JACK		CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA		LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
20	7-682-548-09	SCREW +B 3X8		Q501	8-729-288-02	TRANSISTOR 2SD880	
21	*4-902-941-21	CHASSIS		TM101	1-536-901-11	TERMINAL BOARD 3P (ANTENNA)	

**SECTION 5**

**ELECTRICAL PARTS LIST**

NOTE:  
Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:  
MF:μF, PF:μμF.

RESISTORS  
All resistors are in ohms.  
F : nonflammable

COILS  
MMH : mH, UH : μH

SEMICONDUCTORS  
In each case, U : μ, for example:  
UA...: μA..., UPA...: μPA..., UPC...: μPC,  
UPD...: μPD...

Ref.No.	Part No.	Description
901	1-501-321-11	ANTENNA, TELESCOPIC
902	*A-4351-441-A	MOUNTED PCB, TUNER
903	*1-615-520-11	PC BOARD, TACT
904	*1-615-521-11	PC BOARD, LED
905	*1-615-522-11	PC BOARD, F.E
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)
C101	1-162-195-31	CERAMIC 4.7PF 10% 50V
C102	1-162-198-31	CERAMIC 8.2PF 10% 50V
C103	1-162-193-31	CERAMIC 3.3PF 10% 50V
C104	1-162-306-31	CERAMIC 0.01MF 20% 16V
C105	1-162-306-31	CERAMIC 0.01MF 20% 16V
C106	1-162-199-31	CERAMIC 10PF 5% 50V
C107	1-162-191-31	CERAMIC 2.2PF 10% 50V
C108	1-162-203-31	CERAMIC 15PF 5% 50V
C109	1-162-286-31	CERAMIC 220PF 10% 50V
C110	1-162-187-31	CERAMIC 1PF 20% 50V
C111	1-162-306-31	CERAMIC 0.01MF 20% 16V
C112	1-162-211-31	CERAMIC 33PF 5% 50V
C113	1-162-203-31	CERAMIC 15PF 5% 50V
C114	1-162-198-31	CERAMIC 8.2PF 10% 50V
C115	1-162-196-31	CERAMIC 5.6PF 10% 50V
C116	1-162-191-31	CERAMIC 2.2PF 20% 50V
C117	1-162-306-31	CERAMIC 0.01MF 20% 16V
C118	1-123-332-00	ELECT 47MF 20% 16V
C119	1-101-005-00	CERAMIC 0.022MF 50V
C201	1-101-005-00	CERAMIC 0.022MF 50V
C202	1-101-005-00	CERAMIC 0.022MF 50V
C203	1-101-005-00	CERAMIC 0.022MF 50V
C204	1-162-211-31	CERAMIC 33PF 5% 50V
C205	1-123-380-00	ELECT 1MF 20% 50V
C206	1-101-005-00	CERAMIC 0.022MF 50V
C207	1-123-332-00	ELECT 47MF 20% 16V
C208	1-101-005-00	CERAMIC 0.022MF 50V
C209	1-101-005-00	CERAMIC 0.022MF 50V
C210	1-101-005-00	CERAMIC 0.022MF 50V
C211	1-101-005-00	CERAMIC 0.022MF 50V
C212	1-123-380-00	ELECT 1MF 20% 50V
C301	1-123-332-00	ELECT 47MF 20% 16V
C302	1-123-380-00	ELECT 1MF 20% 50V
C303	1-123-379-00	ELECT 0.47MF 20% 50V
C304	1-123-380-00	ELECT 1MF 20% 50V
C305	1-123-380-00	ELECT 1MF 20% 50V
C306	1-123-356-00	ELECT 10MF 20% 50V
C307	1-123-356-00	ELECT 10MF 20% 50V
C308	1-123-356-00	ELECT 10MF 20% 50V

Ref.No.	Part No.	Description
C309	1-162-294-31	CERAMIC 0.001MF 10% 50V
C310	1-162-294-31	CERAMIC 0.001MF 10% 50V
C311	1-123-380-00	ELECT 1MF 20% 50V
C312	1-123-380-00	ELECT 1MF 20% 50V
C313	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C314	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C315	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C316	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C317	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C318	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C319	1-130-491-00	MYLAR 0.047MF 5% 50V
C320	1-101-005-00	CERAMIC 0.022MF 50V
C401	1-162-294-31	CERAMIC 0.001MF 10% 50V
C402	1-101-005-00	CERAMIC 0.022MF 50V
C403	1-123-356-00	ELECT 10MF 20% 50V
C404	1-101-005-00	CERAMIC 0.022MF 50V
C405	1-101-005-00	CERAMIC 0.022MF 50V
C407	1-162-215-31	CERAMIC 47PF 5% 50V
C408	1-161-494-00	CERAMIC 0.022MF 30% 25V
C409	1-162-294-31	CERAMIC 0.001MF 10% 50V
C410	1-130-487-00	MYLAR 0.022MF 5% 50V
C411	1-101-005-00	CERAMIC 0.022MF 50V
C412	1-101-005-00	CERAMIC 0.022MF 50V
C413	1-162-306-31	CERAMIC 0.01MF 20% 16V
C414	1-101-005-00	CERAMIC 0.022MF 50V
C415	1-123-379-00	ELECT 0.47MF 20% 50V
C416	1-123-332-00	ELECT 47MF 20% 16V
C417	1-123-382-00	ELECT 3.3MF 20% 50V
C418	1-123-369-00	ELECT 4.7MF 20% 50V
C419	1-123-382-00	ELECT 3.3MF 20% 50V
C420	1-101-005-00	CERAMIC 0.022MF 50V
C421	1-162-306-31	CERAMIC 0.01MF 20% 16V
C422	1-161-494-00	CERAMIC 0.022MF 30% 25V
C423	1-101-005-00	CERAMIC 0.022MF 50V
C424	1-102-949-00	CERAMIC 12PF 5% 50V
C425	1-102-880-00	CERAMIC 15PF 5% 50V
C426	1-104-069-00	POLYSTYRENE 470PF 5% 50V
C427	1-101-005-00	CERAMIC 0.022MF 50V
C428	1-102-803-00	CERAMIC 27PF 5% 50V
C429	1-103-741-00	STYROL 0.0047MF 5% 50V
C430	1-101-005-00	CERAMIC 0.022MF 50V
C431	1-102-942-00	CERAMIC 5PF 5% 50V
C432	1-101-005-00	CERAMIC 0.022MF 50V
C433	1-101-005-00	CERAMIC 0.022MF 50V
C434	1-101-005-00	CERAMIC 0.022MF 50V

Ref.No.

C435

C436

C437

C438

C439

C440

C441

C443

C444

C445

C446

C447

C448

C449

C501

C502

C503

C504

C505

C506

C601

C602

C603

C604

C605

C606

C607

C608

C609

C610

C611

C612

C613

C614

C615

C616

C617

C630

C631

C632

C633

C634

C635

CF201

CF202

CF401

CF402

CNJ101

CNJ201

CNJ301

CNJ601

CNJ602

CNJ603

CT401

CT402

CT403

CT404

CT405

CT406

# SECTION 5 ELECTRICAL PARTS LIST

(E model)

**FH-150R**  
**ST-177R**

**FH-150R**  
**ST-177R**

(E model)

## NOTE:

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If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

MF:μF, PF:μμF.

## RESISTORS

All resistors are in ohms.  
F: nonflammable

## COILS

MMH: mH, UH: μH

## SEMICONDUCTORS

In each case, U: μ, for example:

UA...: μA..., UPA...: μPA..., UPC...: μPC,

UPD...: μPD...

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	1-501-321-11	ANTENNA, TELESCOPIC
902	*A-4351-441-A	MOUNTED PCB, TUNER
903	*1-615-520-11	PC BOARD, TACT
904	*1-615-521-11	PC BOARD, LED
905	*1-615-522-11	PC BOARD, F.E
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)
C101	1-162-195-31	CERAMIC 4.7PF 10% 50V
C102	1-162-198-31	CERAMIC 8.2PF 10% 50V
C103	1-162-193-31	CERAMIC 3.3PF 10% 50V
C104	1-162-306-31	CERAMIC 0.01MF 20% 16V
C105	1-162-306-31	CERAMIC 0.01MF 20% 16V
C106	1-162-199-31	CERAMIC 10PF 5% 50V
C107	1-162-191-31	CERAMIC 2.2PF 10% 50V
C108	1-162-203-31	CERAMIC 15PF 5% 50V
C109	1-162-286-31	CERAMIC 220PF 10% 50V
C110	1-162-187-31	CERAMIC 1PF 20% 50V
C111	1-162-306-31	CERAMIC 0.01MF 20% 16V
C112	1-162-211-31	CERAMIC 33PF 5% 50V
C113	1-162-203-31	CERAMIC 15PF 5% 50V
C114	1-162-198-31	CERAMIC 8.2PF 10% 50V
C115	1-162-196-31	CERAMIC 5.6PF 10% 50V
C116	1-162-191-31	CERAMIC 2.2PF 20% 50V
C117	1-162-306-31	CERAMIC 0.01MF 20% 16V
C118	1-123-332-00	ELECT 47MF 20% 16V
C119	1-101-005-00	CERAMIC 0.022MF 50V
C201	1-101-005-00	CERAMIC 0.022MF 50V
C202	1-101-005-00	CERAMIC 0.022MF 50V
C203	1-101-005-00	CERAMIC 0.022MF 50V
C204	1-162-211-31	CERAMIC 33PF 5% 50V
C205	1-123-380-00	ELECT 1MF 20% 50V
C206	1-101-005-00	CERAMIC 0.022MF 50V
C207	1-123-332-00	ELECT 47MF 20% 16V
C208	1-101-005-00	CERAMIC 0.022MF 50V
C209	1-101-005-00	CERAMIC 0.022MF 50V
C210	1-101-005-00	CERAMIC 0.022MF 50V
C211	1-101-005-00	CERAMIC 0.022MF 50V
C212	1-123-380-00	ELECT 1MF 20% 50V
C301	1-123-332-00	ELECT 47MF 20% 16V
C302	1-123-380-00	ELECT 1MF 20% 50V
C303	1-123-379-00	ELECT 0.47MF 20% 50V
C304	1-123-380-00	ELECT 1MF 20% 50V
C305	1-123-380-00	ELECT 1MF 20% 50V
C306	1-123-356-00	ELECT 10MF 20% 50V
C307	1-123-356-00	ELECT 10MF 20% 50V
C308	1-123-356-00	ELECT 10MF 20% 50V

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
C309	1-162-294-31	CERAMIC 0.001MF 10% 50V
C310	1-162-294-31	CERAMIC 0.001MF 10% 50V
C311	1-123-380-00	ELECT 1MF 20% 50V
C312	1-123-380-00	ELECT 1MF 20% 50V
C313	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C314	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C315	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C316	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C317	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C318	1-162-305-31	CERAMIC 0.0068MF 20% 16V
C319	1-130-491-00	MYLAR 0.047MF 5% 50V
C320	1-101-005-00	CERAMIC 0.022MF 50V
C401	1-162-294-31	CERAMIC 0.001MF 10% 50V
C402	1-101-005-00	CERAMIC 0.022MF 50V
C403	1-123-356-00	ELECT 10MF 20% 50V
C404	1-101-005-00	CERAMIC 0.022MF 50V
C405	1-101-005-00	CERAMIC 0.022MF 50V
C407	1-162-215-31	CERAMIC 47PF 5% 50V
C408	1-161-494-00	CERAMIC 0.022MF 30% 25V
C409	1-162-294-31	CERAMIC 0.001MF 10% 50V
C410	1-130-487-00	MYLAR 0.022MF 5% 50V
C411	1-101-005-00	CERAMIC 0.022MF 50V
C412	1-101-005-00	CERAMIC 0.022MF 50V
C413	1-162-306-31	CERAMIC 0.01MF 20% 16V
C414	1-101-005-00	CERAMIC 0.022MF 50V
C415	1-123-379-00	ELECT 0.47MF 20% 50V
C416	1-123-332-00	ELECT 47MF 20% 16V
C417	1-123-382-00	ELECT 3.3MF 20% 50V
C418	1-123-369-00	ELECT 4.7MF 20% 50V
C419	1-123-382-00	ELECT 3.3MF 20% 50V
C420	1-101-005-00	CERAMIC 0.022MF 50V
C421	1-162-306-31	CERAMIC 0.01MF 20% 16V
C422	1-161-494-00	CERAMIC 0.022MF 30% 25V
C423	1-101-005-00	CERAMIC 0.022MF 50V
C424	1-102-949-00	CERAMIC 12PF 5% 50V
C425	1-102-880-00	CERAMIC 15PF 5% 50V
C426	1-104-069-00	POLYSTYRENE 470PF 5% 50V
C427	1-101-005-00	CERAMIC 0.022MF 50V
C428	1-102-803-00	CERAMIC 27PF 5% 50V
C429	1-103-741-00	STYROL 0.0047MF 5% 50V
C430	1-101-005-00	CERAMIC 0.022MF 50V
C431	1-102-942-00	CERAMIC 5PF 5% 50V
C432	1-101-005-00	CERAMIC 0.022MF 50V
C433	1-101-005-00	CERAMIC 0.022MF 50V
C434	1-101-005-00	CERAMIC 0.022MF 50V

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
C435	1-102-754-00	CERAMIC 39PF 5% 50V
C436	1-130-484-00	MYLAR 0.012MF 5% 50V
C437	1-101-005-00	CERAMIC 0.022MF 50V
C438	1-101-005-00	CERAMIC 0.022MF 50V
C439	1-101-005-00	CERAMIC 0.022MF 50V
C440	1-101-005-00	CERAMIC 0.022MF 50V
C441	1-101-005-00	CERAMIC 0.022MF 50V
C443	1-101-005-00	CERAMIC 0.022MF 50V
C444	1-101-005-00	CERAMIC 0.022MF 50V
C445	1-101-005-00	CERAMIC 0.022MF 50V
C446	1-101-005-00	CERAMIC 0.022MF 50V
C447	1-123-381-00	ELECT 2.2MF 20% 50V
C448	1-123-380-00	ELECT 1MF 20% 50V
C449	1-123-380-00	ELECT 1MF 20% 50V
C501	1-101-005-00	CERAMIC 0.022MF 50V
C502	1-123-333-00	ELECT 100MF 20% 16V
C503	1-101-005-00	CERAMIC 0.022MF 50V
C504	1-123-307-00	ELECT 100MF 20% 10V
C505	1-101-005-00	CERAMIC 0.022MF 50V
C506	1-101-005-00	CERAMIC 0.022MF 50V
C601	1-101-005-00	CERAMIC 0.022MF 50V
C602	1-123-307-00	ELECT 100MF 20% 10V
C603	1-102-852-00	CERAMIC 47PF 5% 50V
C604	1-102-852-00	CERAMIC 47PF 5% 50V
C605	1-123-380-00	ELECT 1MF 20% 50V
C606	1-101-005-00	CERAMIC 0.022MF 50V
C607	1-162-306-31	CERAMIC 0.01MF 20% 16V
C608	1-101-005-00	CERAMIC 0.022MF 50V
C609	1-123-356-00	ELECT 10MF 20% 50V
C610	1-101-005-00	CERAMIC 0.022MF 50V
C611	1-123-332-00	ELECT 47MF 20% 16V
C612	1-136-171-00	FILM 0.33MF 5% 50V
C613	1-130-487-00	MYLAR 0.022MF 5% 50V
C614	1-123-609-00	ELECT 0.33MF 20% 50V
C615	1-136-171-00	FILM 0.33MF 5% 50V
C616	1-130-487-00	MYLAR 0.022MF 5% 50V
C617	1-123-607-00	ELECT 0.1MF 20% 50V
C630	1-162-294-31	CERAMIC 0.001MF 10% 50V
C631	1-101-005-00	CERAMIC 0.022MF 50V
C632	1-101-005-00	CERAMIC 0.022MF 50V
C633	1-101-005-00	CERAMIC 0.022MF 50V
C634	1-161-494-00	CERAMIC 0.022MF 30% 25V
C635	1-101-006-00	CERAMIC 0.047MF 50V
CF201	1-527-968-00	FILTER, CERAMIC
CF202	1-527-968-00	FILTER, CERAMIC
CF401	1-527-937-00	FILTER, CERAMIC
CF402	1-527-981-00	FILTER, CERAMIC
CNJ101	*1-562-327-00	SOCKET, CONNECTOR 3P
CNJ201	*1-560-060-00	PIN, CONNECTOR 2P (NULL CHECK POINT)
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P
CNJ601	*1-560-604-00	PIN, CONNECTOR 5P
CNJ602	*1-560-602-00	PIN, CONNECTOR 3P
CNJ603	*1-560-603-00	PIN, CONNECTOR 4P
CT401	1-141-227-00	CAP, CERAMIC TRIMMER
CT402	1-141-227-00	CAP, CERAMIC TRIMMER
CT403	1-141-227-00	CAP, CERAMIC TRIMMER
CT404	1-141-227-00	CAP, CERAMIC TRIMMER
CT405	1-141-227-00	CAP, CERAMIC TRIMMER
CT406	1-141-227-00	CAP, CERAMIC TRIMMER

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
D101	8-719-918-45	DIODE KV1310
D102	8-719-918-45	DIODE KV1310
D103	8-719-918-45	DIODE KV1310
D105	8-719-107-94	DIODE 1SS202-1
D201	8-719-107-94	DIODE 1SS202-1
D202	8-719-107-94	DIODE 1SS202-1
D301	8-719-904-08	DIODE SLH54VC3
D302	8-719-107-94	DIODE 1SS202-1
D303	8-719-107-94	DIODE 1SS202-1
D304	8-719-107-94	DIODE 1SS202-1
D401	8-719-107-94	DIODE 1SS202-1
D402	8-719-902-79	DIODE KV1236Z
D403	8-719-902-79	DIODE KV1236Z
D404	8-719-903-27	DIODE 1SS168
D405	8-719-903-27	DIODE 1SS168
D406	8-719-903-27	DIODE 1SS168
D407	8-719-903-27	DIODE 1SS168
D408	8-719-903-27	DIODE 1SS168
D409	8-719-903-27	DIODE 1SS168
D410	8-719-903-27	DIODE 1SS168
D411	8-719-903-27	DIODE 1SS168
D412	8-719-903-27	DIODE 1SS168
D413	8-719-903-27	DIODE 1SS168
D414	8-719-903-27	DIODE 1SS168
D415	8-719-903-27	DIODE 1SS168
D416	8-719-903-27	DIODE 1SS168
D417	8-719-903-27	DIODE 1SS168
D418	8-719-903-27	DIODE 1SS168
D421	8-719-903-27	DIODE 1SS168
D422	8-719-107-94	DIODE 1SS202-1
D501	8-719-910-23	DIODE HZ12A3L
D502	8-719-910-64	DIODE HZ6B1L
D601	8-719-107-94	DIODE 1SS202-1
D602	8-719-107-94	DIODE 1SS202-1
D603	8-719-107-94	DIODE 1SS202-1
D604	8-719-107-94	DIODE 1SS202-1
D605	8-719-107-94	DIODE 1SS202-1
D606	8-719-107-94	DIODE 1SS202-1
D607	8-719-107-94	DIODE 1SS202-1
D608	8-719-107-94	DIODE 1SS202-1
D609	8-719-107-94	DIODE 1SS202-1
D610	8-719-107-94	DIODE 1SS202-1
D611	8-719-107-94	DIODE 1SS202-1
D612	8-719-107-94	DIODE 1SS202-1
D613	8-719-107-94	DIODE 1SS202-1
D614	8-719-107-94	DIODE 1SS202-1
D615	8-719-107-94	DIODE 1SS202-1
D616	8-719-107-94	DIODE 1SS202-1
D617	8-719-107-94	DIODE 1SS202-1
IC201	8-759-812-31	IC LA1231
IC301	8-759-801-80	IC LA3401
IC401	8-759-812-45	IC LA1245
IC601	8-759-204-24	IC TC9302F-005
IC602	8-759-202-63	IC TC9172P
L101	*1-422-214-11	COIL, AIR-CORE
L102	*1-422-040-00	COIL, AIR-CORE
L103	*1-422-081-00	COIL (WITH CORE)
L104	*1-422-039-00	COIL, AIR-CORE



ELECTRICAL PARTS

Ref.No.	Part No.	Description
L105	*1-459-396-00	COIL (WITH CORE)
L301	1-408-924-00	MICRO INDUCTOR 10MMH
L302	1-408-924-00	MICRO INDUCTOR 10MMH
L401	1-402-152-11	ANTENNA, FERRITE-ROD (MW)
L402	1-406-089-11	COIL (OSC)
L403	1-405-955-00	COIL (OSC)
L404	1-406-106-11	COIL (OSC) SW2
L405	1-401-910-00	COIL (ANT)
L406	1-401-985-00	COIL (ANT)
L407	1-408-202-00	MICRO INDUCTOR 390UH
L408	1-408-202-00	MICRO INDUCTOR 390UH
L409	1-408-196-00	MICRO INDUCTOR 120UH
L410	1-408-202-00	MICRO INDUCTOR 390UH
L411	1-408-202-00	MICRO INDUCTOR 390UH
L412	1-408-202-00	MICRO INDUCTOR 390UH
L413	1-408-551-00	MICRO INDUCTOR 1UH
L414	1-408-202-00	MICRO INDUCTOR 390UH
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056
PL501	1-518-511-21	LAMP, PILOT, YELLOW
Q101	8-729-353-52	TRANSISTOR 2SC535
Q102	8-729-353-52	TRANSISTOR 2SC535
Q103	8-729-672-42	TRANSISTOR 2SC2724-C
Q104	8-729-672-42	TRANSISTOR 2SC2724-C
Q201	8-729-672-42	TRANSISTOR 2SC2724-C
Q301	8-729-606-33	TRANSISTOR 2SC2603-F
Q302	8-729-606-33	TRANSISTOR 2SC2603-F
Q303	8-729-900-63	TRANSISTOR DTA124ES
Q304	8-729-900-36	TRANSISTOR DTC124ES
Q305	8-729-900-36	TRANSISTOR DTC124ES
Q401	8-729-606-33	TRANSISTOR 2SC2603-F
Q501	8-729-288-02	TRANSISTOR 2SD880
Q502	8-729-224-61	TRANSISTOR 2SK246-Y
Q601	8-729-201-56	TRANSISTOR 2SK246-GR2
Q602	8-729-606-33	TRANSISTOR 2SC2603-F
Q603	8-729-201-56	TRANSISTOR 2SK246-GR2
Q604	8-729-606-33	TRANSISTOR 2SC2603-F
Q605	8-729-900-36	TRANSISTOR DTC124ES
Q606	8-729-900-63	TRANSISTOR DTA124ES
Q607	8-729-900-63	TRANSISTOR DTA124ES
Q608	8-729-900-36	TRANSISTOR DTC124ES
Q609	8-729-900-63	TRANSISTOR DTA124ES
Q610	8-729-900-36	TRANSISTOR DTC124ES
Q611	8-729-900-63	TRANSISTOR DTA124ES
Q612	8-729-900-36	TRANSISTOR DTC124ES
Q613	8-729-900-63	TRANSISTOR DTA124ES
Q614	8-729-606-33	TRANSISTOR 2SC2603-F
Q615	8-729-900-36	TRANSISTOR DTC124ES
R101	1-249-441-11	CARBON 100K 5% 1/6W
R102	1-247-901-00	CARBON 820K 5% 1/6W
R103	1-249-405-11	CARBON 100 5% 1/6W
R104	1-249-405-11	CARBON 100 5% 1/6W
R105	1-249-441-11	CARBON 100K 5% 1/6W
R106	1-247-901-00	CARBON 820K 5% 1/6W
R107	1-247-819-00	CARBON 330 5% 1/6W
R108	1-247-795-00	CARBON 33 5% 1/6W
R109	1-249-405-11	CARBON 100 5% 1/6W
R110	1-247-893-00	CARBON 390K 5% 1/6W
R111	1-249-425-11	CARBON 4.7K 5% 1/6W
R112	1-247-859-00	CARBON 15K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R113	1-247-893-00	CARBON	390K	5%	1/6W
R114	1-249-405-11	CARBON	100	5%	1/6W
R115	1-247-799-00	CARBON	47	5%	1/4W F
R201	1-247-901-00	CARBON	820K	5%	1/6W
R202	1-247-819-00	CARBON	330	5%	1/6W
R203	1-247-819-00	CARBON	330	5%	1/6W
R204	1-247-873-00	CARBON	56K	5%	1/6W
R205	1-247-831-00	CARBON	1K	5%	1/6W
R206	1-247-859-00	CARBON	15K	5%	1/6W
R207	1-249-433-11	CARBON	22K	5%	1/6W
R208	1-247-799-00	CARBON	47	5%	1/4W
R209	1-247-859-00	CARBON	15K	5%	1/6W
R210	1-249-441-11	CARBON	100K	5%	1/6W
R211	1-249-429-11	CARBON	10K	5%	1/6W
R301	1-247-799-00	CARBON	47	5%	1/6W
R302	1-249-423-00	CARBON	3.3K	5%	1/6W
R303	1-249-435-11	CARBON	33K	5%	1/6W
R304	1-247-833-00	CARBON	1.2K	5%	1/6W
R305	1-249-437-11	CARBON	47K	5%	1/6W
R306	1-249-437-11	CARBON	47K	5%	1/6W
R307	1-249-419-11	CARBON	1.5K	5%	1/6W
R308	1-249-419-11	CARBON	1.5K	5%	1/6W
R309	1-249-429-11	CARBON	10K	5%	1/6W
R310	1-249-429-11	CARBON	10K	5%	1/6W
R312	1-249-437-11	CARBON	47K	5%	1/6W
R313	1-247-831-00	CARBON	1K	5%	1/6W
R314	1-249-437-11	CARBON	47K	5%	1/6W
R316	1-249-437-11	CARBON	47K	5%	1/6W
R319	1-249-437-11	CARBON	47K	5%	1/6W
R320	1-249-437-11	CARBON	47K	5%	1/6W
R322	1-249-437-11	CARBON	47K	5%	1/6W
R330	1-247-853-00	CARBON	8.2K	5%	1/6W
R401	1-249-421-11	CARBON	2.2K	5%	1/6W
R402	1-249-405-11	CARBON	100	5%	1/6W
R403	1-247-825-00	CARBON	560	5%	1/6W
R404	1-249-423-00	CARBON	3.3K	5%	1/6W
R405	1-247-799-00	CARBON	47	5%	1/6W
R406	1-249-429-11	CARBON	10K	5%	1/6W
R407	1-249-405-11	CARBON	100	5%	1/6W
R408	1-249-429-11	CARBON	10K	5%	1/6W
R409	1-247-811-00	CARBON	150	5%	1/6W
R410	1-249-429-11	CARBON	10K	5%	1/6W
R411	1-249-429-11	CARBON	10K	5%	1/6W
R412	1-247-859-00	CARBON	15K	5%	1/6W
R413	1-249-433-11	CARBON	22K	5%	1/6W
R414	1-249-429-11	CARBON	10K	5%	1/6W
R415	1-249-429-11	CARBON	10K	5%	1/6W
R418	1-247-857-00	CARBON	12K	5%	1/6W
R419	1-249-429-11	CARBON	10K	5%	1/6W
R420	1-249-429-11	CARBON	10K	5%	1/6W
R421	1-247-857-00	CARBON	12K	5%	1/6W
R422	1-247-851-00	CARBON	6.8K	5%	1/6W
R423	1-247-825-00	CARBON	560	5%	1/6W
R424	1-247-857-00	CARBON	12K	5%	1/6W
R425	1-247-857-00	CARBON	12K	5%	1/6W
R426	1-247-857-00	CARBON	12K	5%	1/6W
R427	1-247-857-00	CARBON	12K	5%	1/6W

ELECTRICAL PARTS

<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>			
R428	1-247-857-00	CARBON	12K	5%	1/6W
R429	1-247-857-00	CARBON	12K	5%	1/6W
R430	1-247-857-00	CARBON	12K	5%	1/6W
R431	1-247-857-00	CARBON	12K	5%	1/6W
R439	1-249-429-11	CARBON	10K	5%	1/6W
R440	1-247-857-00	CARBON	12K	5%	1/6W
R441	1-247-879-00	CARBON	100K	5%	1/6W
R501	1-247-815-00	CARBON	220	5%	1/6W
R502	1-247-823-00	CARBON	470	5%	1/6W
R503	1-247-775-00	CARBON	4.7	5%	1/6W
R504	1-247-831-00	CARBON	1K	5%	1/6W
R601	1-249-425-11	CARBON	4.7K	5%	1/6W
R602	1-249-441-11	CARBON	100K	5%	1/6W
R603	1-249-435-11	CARBON	33K	5%	1/6W
R604	1-249-423-11	CARBON	3.3K	5%	1/6W
R605	1-249-441-11	CARBON	100K	5%	1/6W
R606	1-249-435-11	CARBON	33K	5%	1/6W
R607	1-247-797-00	CARBON	39	5%	1/6W
R608	1-247-799-00	CARBON	47	5%	1/6W
R609	1-249-437-11	CARBON	47K	5%	1/6W
R610	1-247-817-00	CARBON	270	5%	1/6W
R611	1-247-829-00	CARBON	820	5%	1/6W
R612	1-247-825-00	CARBON	560	5%	1/6W
R613	1-249-435-11	CARBON	33K	5%	1/6W
R614	1-249-421-11	CARBON	2.2K	5%	1/6W
R615	1-249-425-11	CARBON	4.7K	5%	1/6W
R616	1-249-425-11	CARBON	4.7K	5%	1/6W
R617	1-249-437-11	CARBON	47K	5%	1/6W
R618	1-247-817-00	CARBON	270	5%	1/6W
R619	1-247-829-00	CARBON	820	5%	1/6W
R620	1-247-825-00	CARBON	560	5%	1/6W
R621	1-249-435-11	CARBON	33K	5%	1/6W
R622	1-249-421-11	CARBON	2.2K	5%	1/6W
R623	1-249-425-11	CARBON	4.7K	5%	1/6W
R624	1-249-425-11	CARBON	4.7K	5%	1/6W
R625	1-247-891-00	CARBON	330K	5%	1/6W
R640	1-249-435-11	CARBON	33K	5%	1/6W
R643	1-249-441-11	CARBON	100K	5%	1/6W
R644	1-249-425-11	CARBON	4.7K	5%	1/6W
RV201	1-228-997-00	RES, ADJ, CARBON 100K			
RV301	1-228-998-00	RES, ADJ, CARBON 220K			

ELECTRICAL PARTS

<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>
S701	1-554-303-21	SWITCH, KEY BOARD (BAND)
S702	1-554-303-21	SWITCH, KEY BOARD (STEREO MUTING)
S703	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S704	1-554-303-21	SWITCH, KEY BOARD (TUNING -)
S705	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
S706	1-554-303-21	SWITCH, KEY BOARD (PRESET 1)
S707	1-554-303-21	SWITCH, KEY BOARD (PRESET 2)
S708	1-554-303-21	SWITCH, KEY BOARD (PRESET 3)
S709	1-554-303-21	SWITCH, KEY BOARD (PRESET 4)
S710	1-554-303-21	SWITCH, KEY BOARD (PRESET 5)
T201	1-404-419-00	COIL, DISCRIMINATOR
T401	1-404-535-11	COIL (WITH IFT)
TM101	1-536-901-11	TERMINAL BOARD 3P (ANTENNA)
X301	1-567-250-11	OSCILLATOR, CERAMIC
X601	1-567-125-00	VIBRATOR, CRYSTAL

# INTEGRATED STEREO AMPLIFIER (TA-177R)

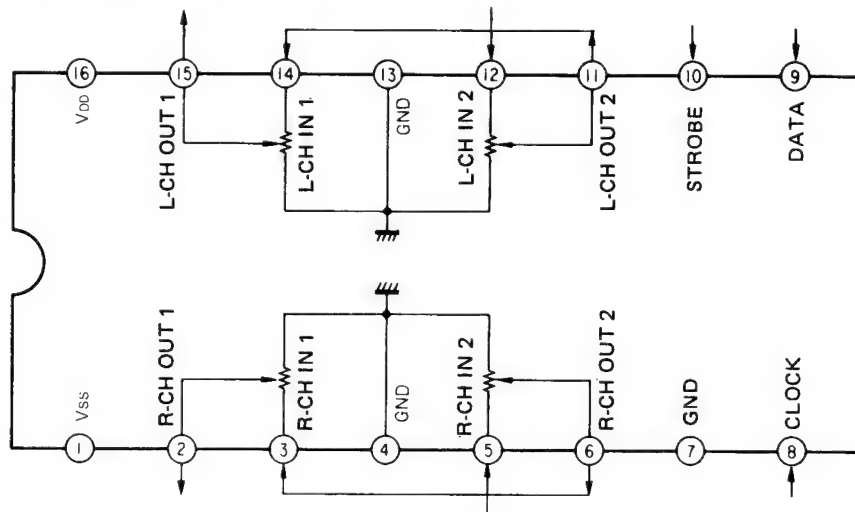
**Note:** TA-177R is an integrated stereo amplifier unit in FH-150R.

## 1. IC'S OPERATION

### 1-1. TC9176P (IC203)

TC9176P is an IC served as electronic volume.

This IC is capable of controlling the attenuation from 0 dB to -76 dB at intervals of 2 dB.



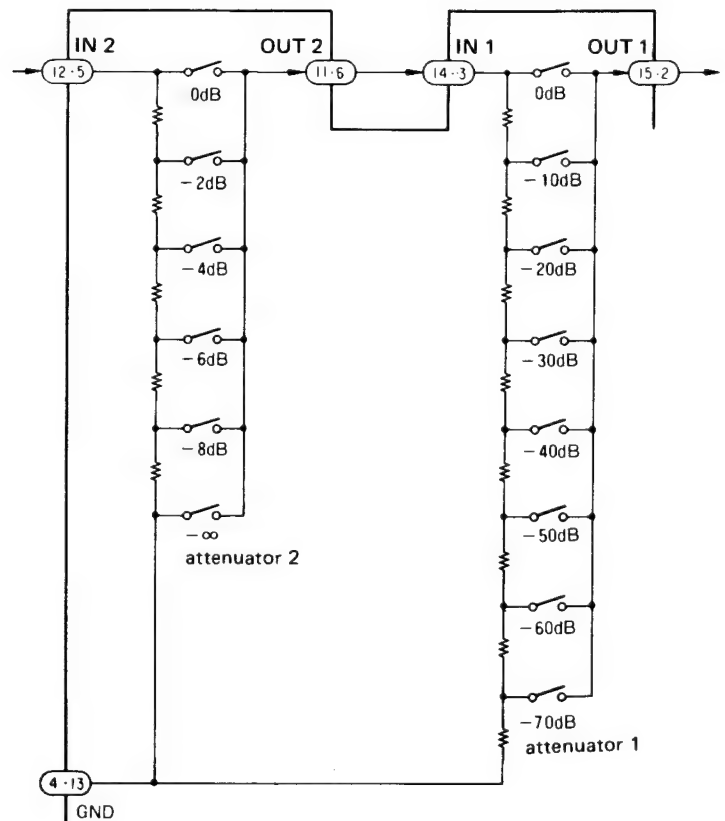
#### • Pin Functions

- ② R-CH OUT 1, ⑮ L-CH OUT 1  
Output pin for 10 dB step attenuator.  
The signal applied to L/R-CH IN 1 attenuates 8 steps from 0 to -70 dB at intervals of 10 dB.
- ③ R-CH IN 1, ⑭ L-CH IN 1  
Input pin for 10 dB step attenuator.
- ⑥ R-CH OUT 2, ⑪ L-CH OUT 2  
Output pin for 2 dB step attenuator.  
The signal applied to L/R-CH IN 2 attenuates 5 steps from 0 to -8 dB at intervals of 2 dB.
- ⑤ R-CH IN 2, ⑫ L-CH IN 2  
Input pin for 2 dB step attenuator.

The attenuator is composed of the resistors and the analog switches.

Attenuator 1 attenuates 10 dB steps from 0 to -70 dB and attenuator 2 attenuates 2 dB steps from 0 to 8 dB.

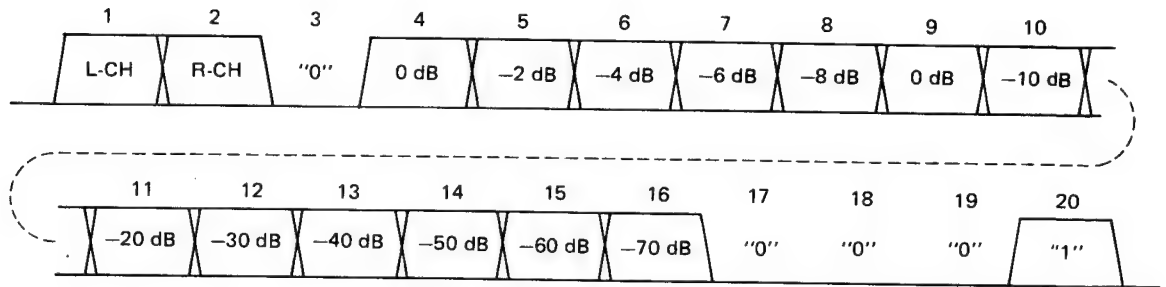
Total attenuation is 2 dB steps from 0 to -76 dB.



⑨ DATA

This pin is input the serial data from IC301.

Data contain attenuation value and selection of L-CH or R-CH, and these are composed of 20 bits.



⑧ CLOCK

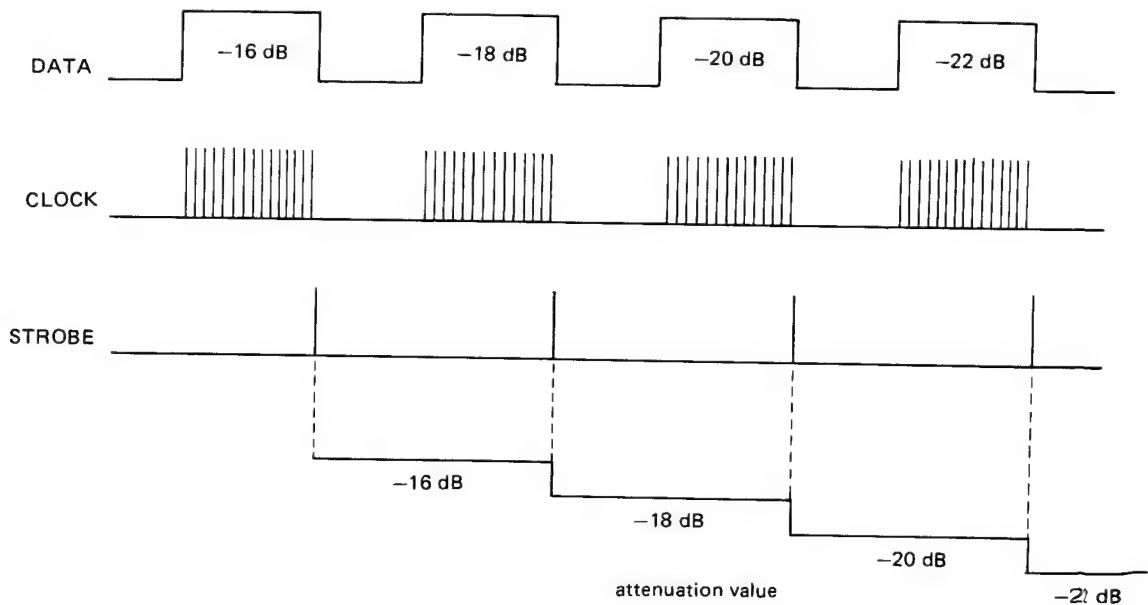
This pin is input the clock signal.

Data are input to the pin ⑨ that is synchronized by clock signal.

⑩ STROBE

This pin is input the strobe pulse.

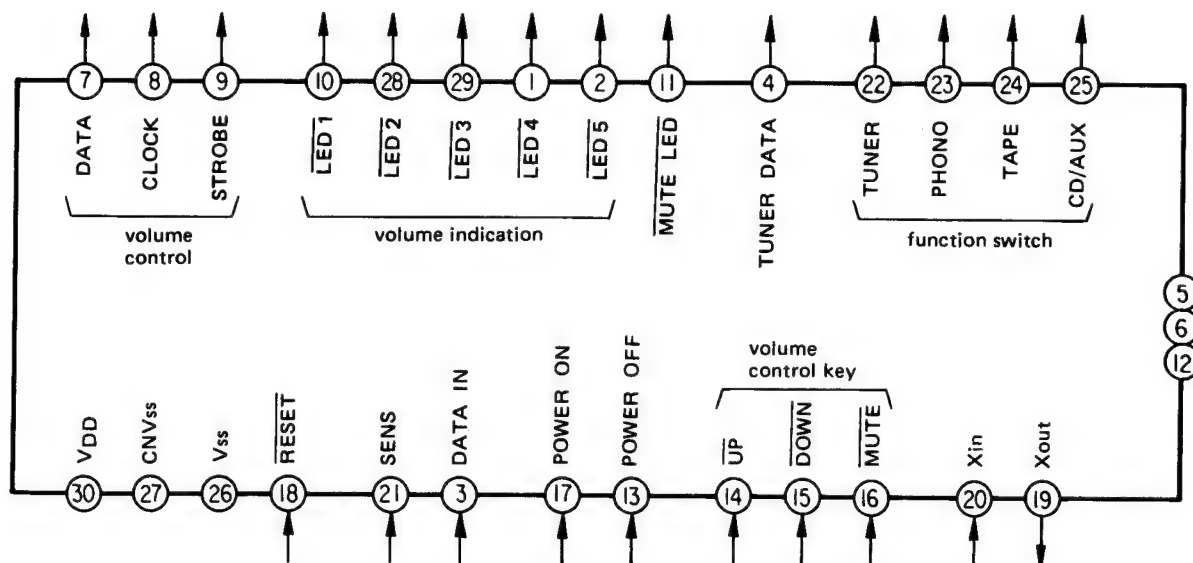
Data are latched, when strobe pulse is input to pin ⑩.



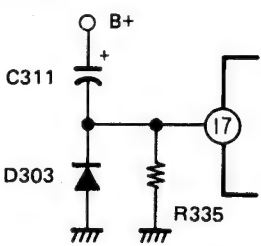
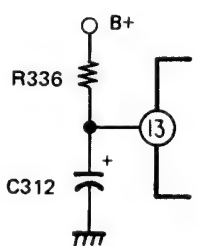


## 1-2. M50765-440SP (IC301)

M50765-440SP decodes the serial data of remote controller and feeds the volume control data to IC203.



### • Pin Functions

Pin Number	Pin Name	I/O	Function
3	DATA IN	Input	This pin is input the serial data of remote controller.
21	SENS	Input	Input pin for starting transmission of the remote controller data. Input data ③ DATA is read at the beginning of the signal input to this pin.
17 13	POWER ON POWER OFF	Input Input	<p>When power is turned on, pin ①⑦ is input high level pulse from differential circuit and IC will be in standby mode.</p> <p>Second, pin ①③ goes high level by integrating circuit and IC will be started.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>After power is turned off, ①③ pin goes low level by integrating circuit and IC detects power off.</p> <p>IC's data (volume data) are kept by back-up battery.</p>
14 15	UP DOWN	Input Input	Input pin for volume control. When the signal is applied to these pins, ⑦ DATA, ⑧ CLOCK and ⑨ STROBE output the volume control data to IC203.
16	MUTE	Input	Input pin for switching MUTING -20 dB on/off.
22	TUNER	Output	Output pin for switching the mode to TUNER. When ③ DATA IN inputs the data of TUNER, this pin goes high.

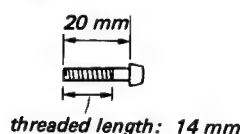
Pin Number	Pin Name	I/O	Function																																															
23	PHONO	Output	Output pin for switching the mode to PHONO. When ③ DATA IN inputs the data of PHONO, this pin goes high.																																															
24	TAPE	Output	Output pin for switching the mode to TAPE. When ③ DATA IN inputs the data of TAPE, this goes high.																																															
25	CD/AUX	Output	Output pin for switching the mode to CD/AUX. When ③ DATA IN inputs the data of CD/AUX, this pin goes high.																																															
11	MUTE LED	Output	Output pin for switching the MUTING -20 dB LED on/off.																																															
10 28 29 1 2	LED 1 LED 2 LED 3 LED 4 LED 5	Output	Output pin for indicating the volume level. These pins output signal that cope with volume level. <table><tr><th rowspan="2">Volume level (dB)</th><th colspan="5">Pin</th></tr><tr><th>⑩</th><th>⑳</th><th>㉑</th><th>①</th><th>②</th></tr><tr><td>0 to -2</td><td>L</td><td>L</td><td>L</td><td>L</td><td>L</td></tr><tr><td>-4 to -6</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td></tr><tr><td>-8 to -18</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td>-20 to -34</td><td>L</td><td>L</td><td>H</td><td>H</td><td>H</td></tr><tr><td>-36 to -76</td><td>L</td><td>H</td><td>H</td><td>H</td><td>H</td></tr><tr><td>-78 to -∞</td><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td></tr></table> <div>H: high level L: low level</div>	Volume level (dB)	Pin					⑩	⑳	㉑	①	②	0 to -2	L	L	L	L	L	-4 to -6	L	L	L	L	H	-8 to -18	L	L	L	H	H	-20 to -34	L	L	H	H	H	-36 to -76	L	H	H	H	H	-78 to -∞	H	H	H	H	H
Volume level (dB)	Pin																																																	
	⑩	⑳	㉑	①	②																																													
0 to -2	L	L	L	L	L																																													
-4 to -6	L	L	L	L	H																																													
-8 to -18	L	L	L	H	H																																													
-20 to -34	L	L	H	H	H																																													
-36 to -76	L	H	H	H	H																																													
-78 to -∞	H	H	H	H	H																																													
4	TUNER DATA	Output	This pin outputs the receiving band/station switching signal. That signal feeds to tuner unit (ST-177R).																																															
7	DATA	Output	This pin outputs the volume control data to IC203.																																															
8	CLOCK	Output	This pin outputs the clock signal of volume control data.																																															
9	STROBE	Output	This pin outputs the strobe signal of volume control data.																																															

## 2. SERVICING NOTE (G-AEP model only)

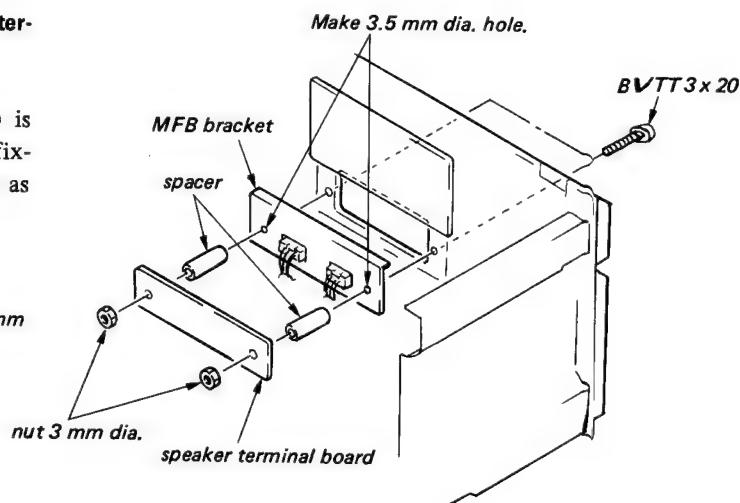
- Caution on replacing screws fixing speaker terminal board.

Two types ①, ② of screw (BVTT3 x 20) is supplied as repair part for speaker terminal board fixing. If ① type screw is supplied, make a hole as shown in the figure.

① type screw

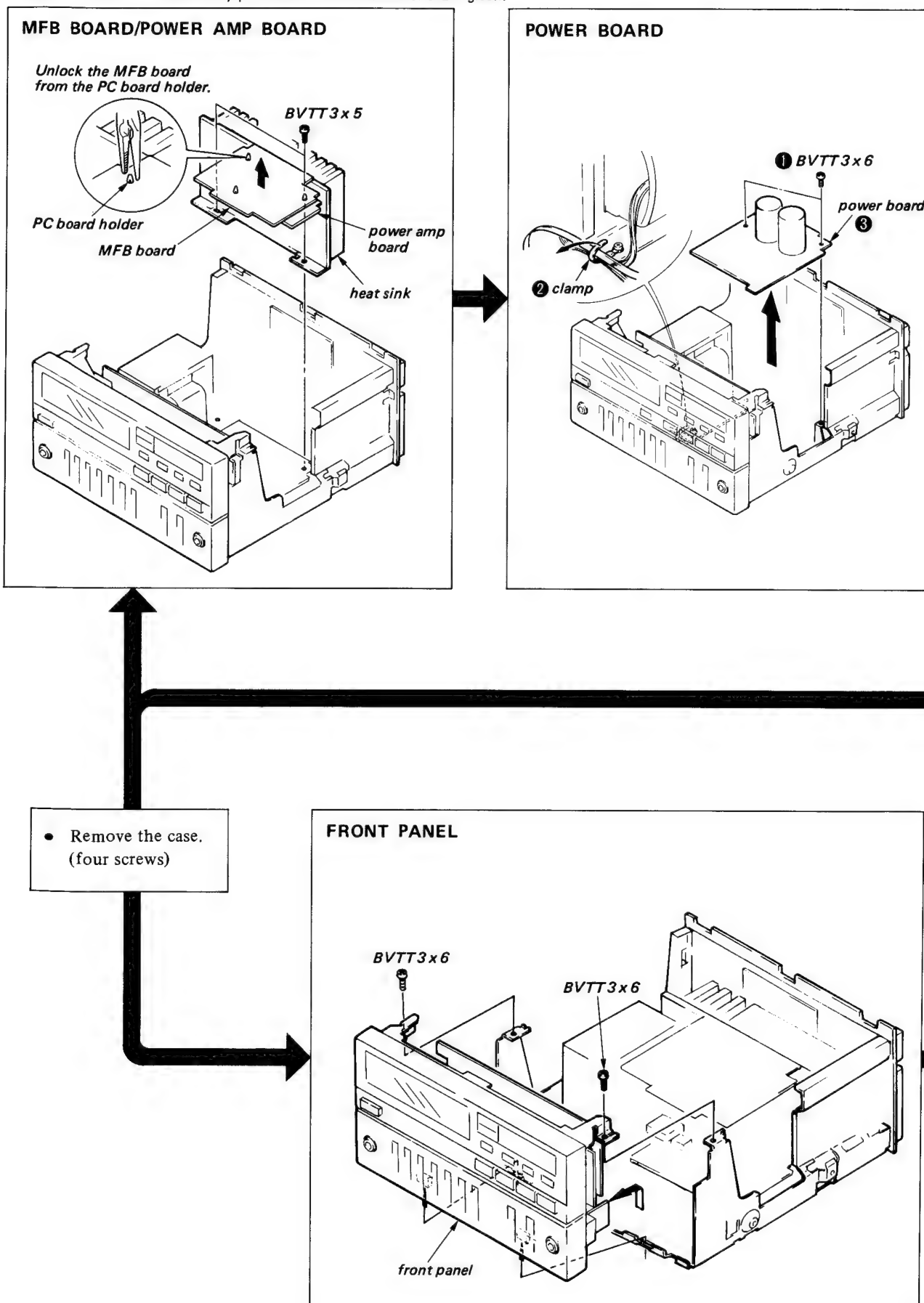


② type screw threaded length: 20 mm

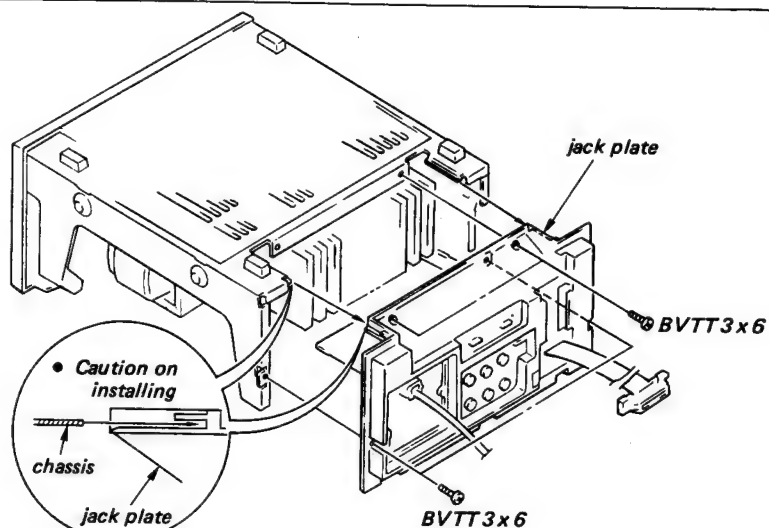


### 3. DISASSEMBLY

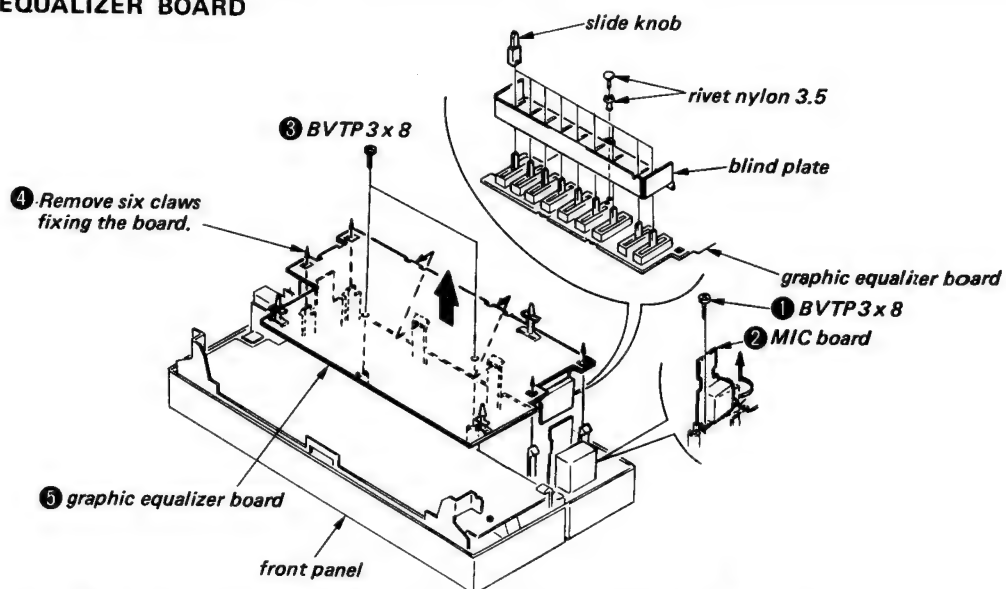
**Note:** Follow the disassembly procedure in the numerical order given.



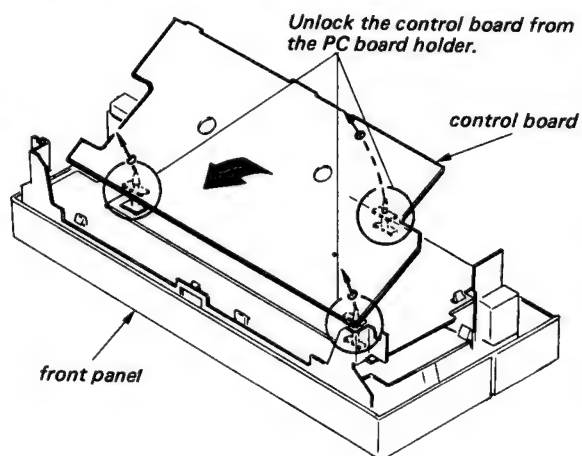
**JACK PLATE**



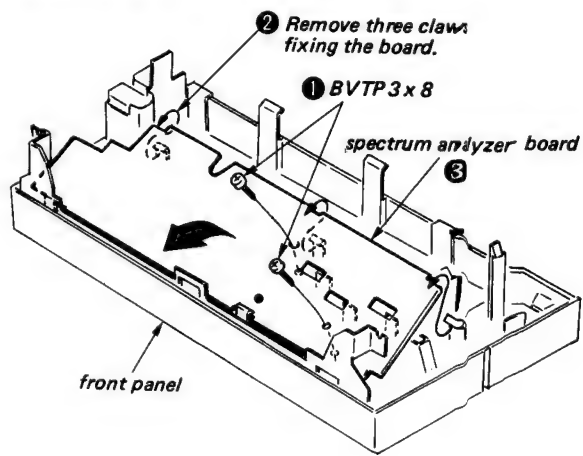
## GRAPHIC EQUALIZER BOARD



## CONTROL BOARD



## SPECTRUM ANALYZER BOARD

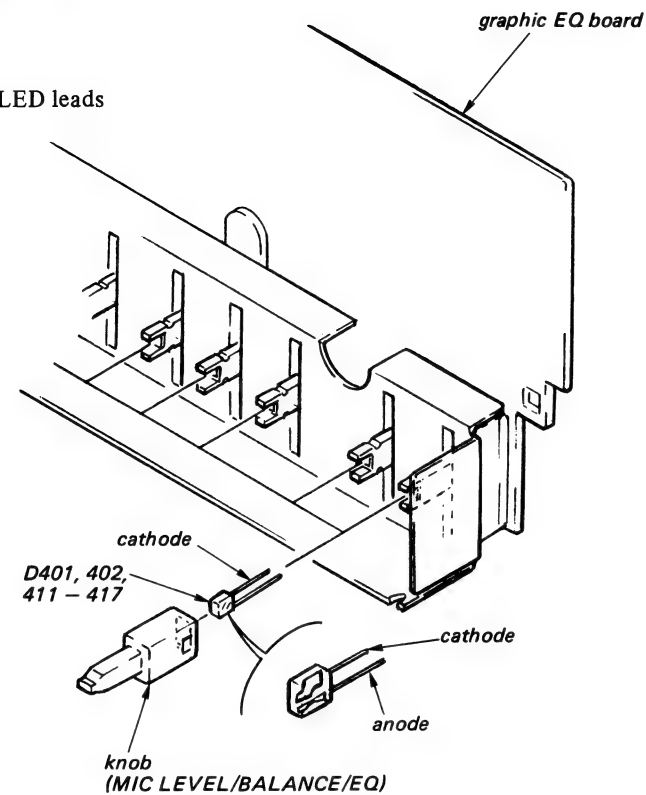




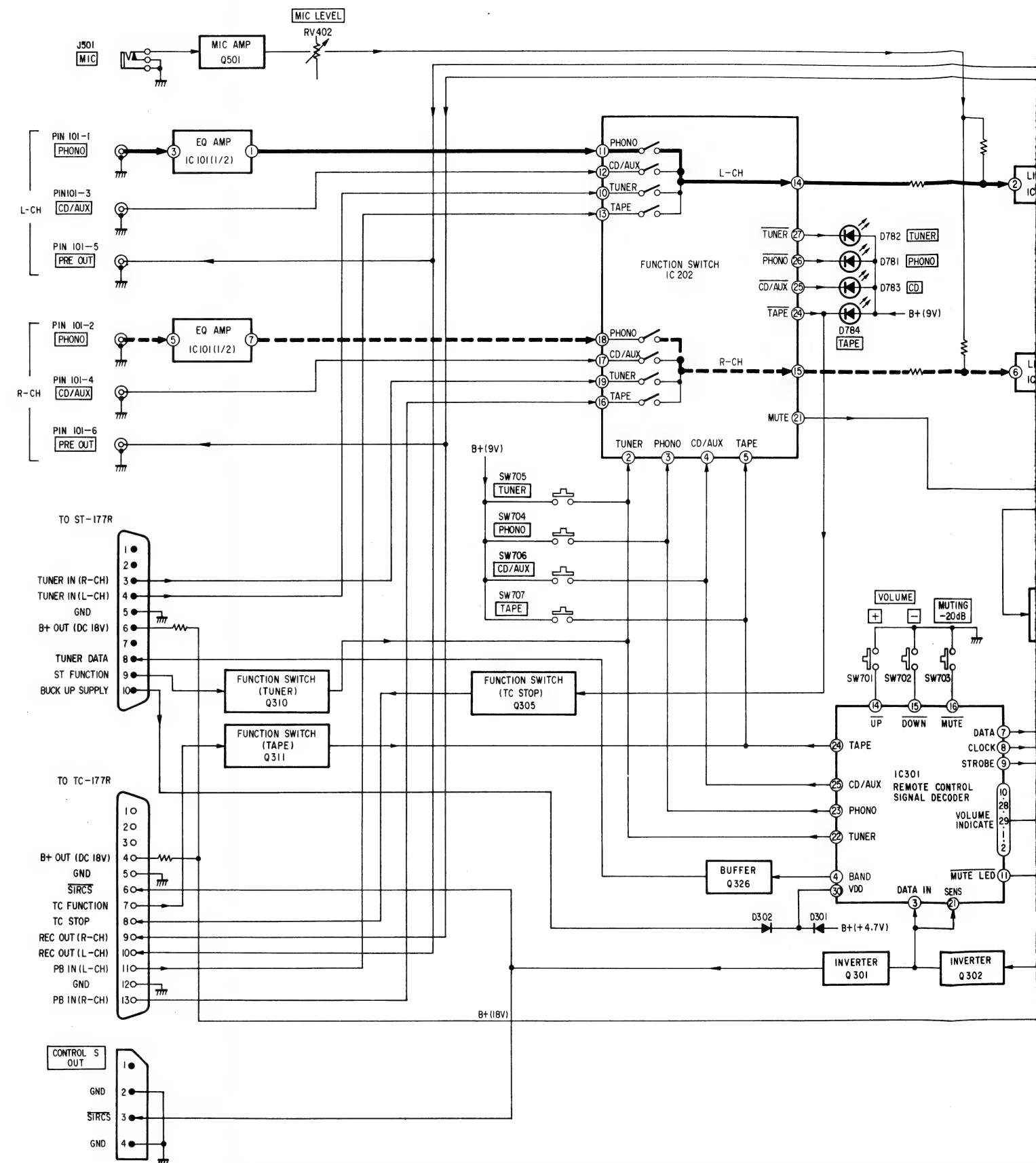
# LEDs OF D401, 402, 411 - 417 REPLACEMENT

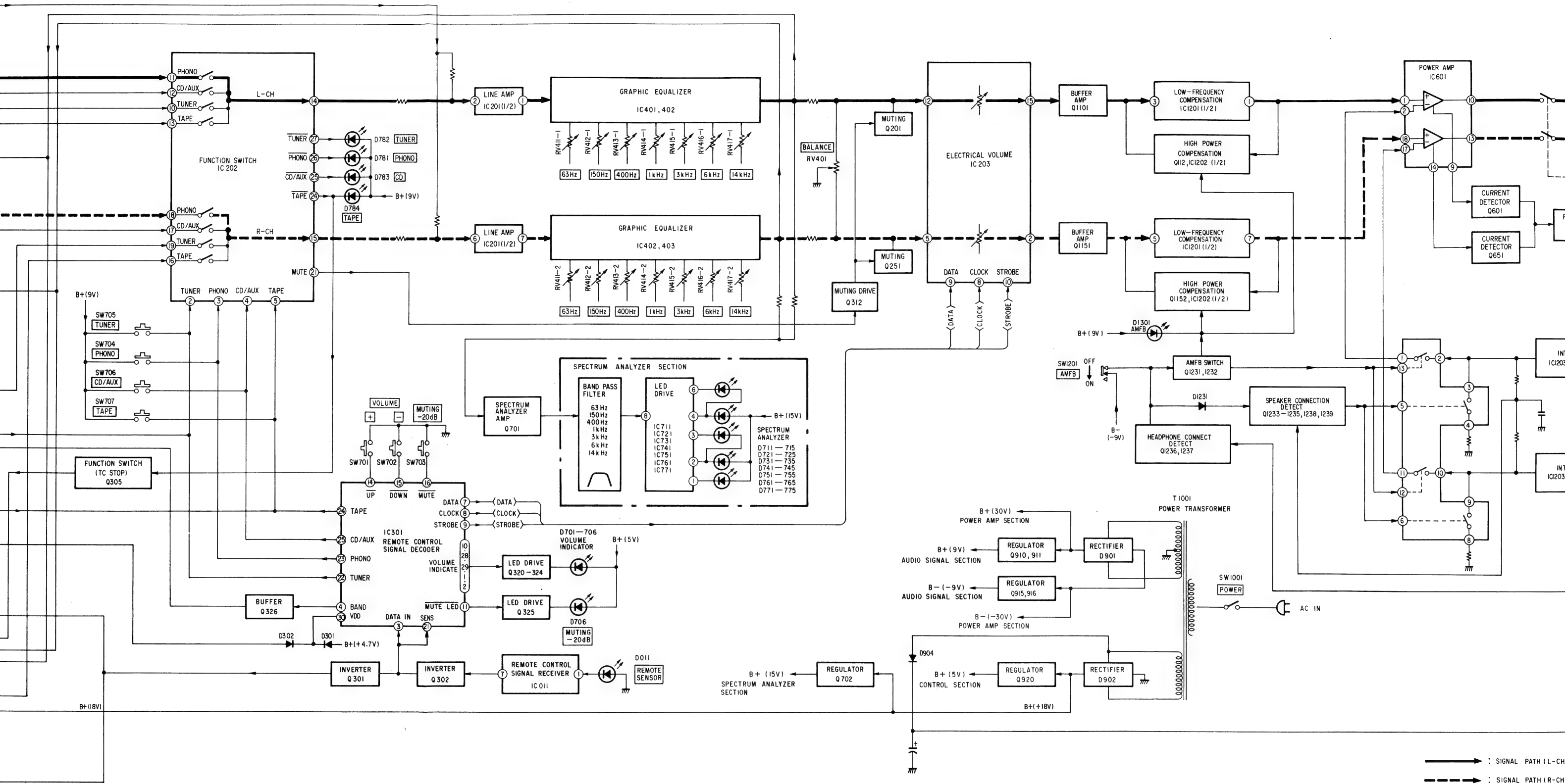
Though LEDs of D401, 402, 411 - 417 are built in each variable resistor RV401, 402, 411 - 417, only LEDs can be replaced.

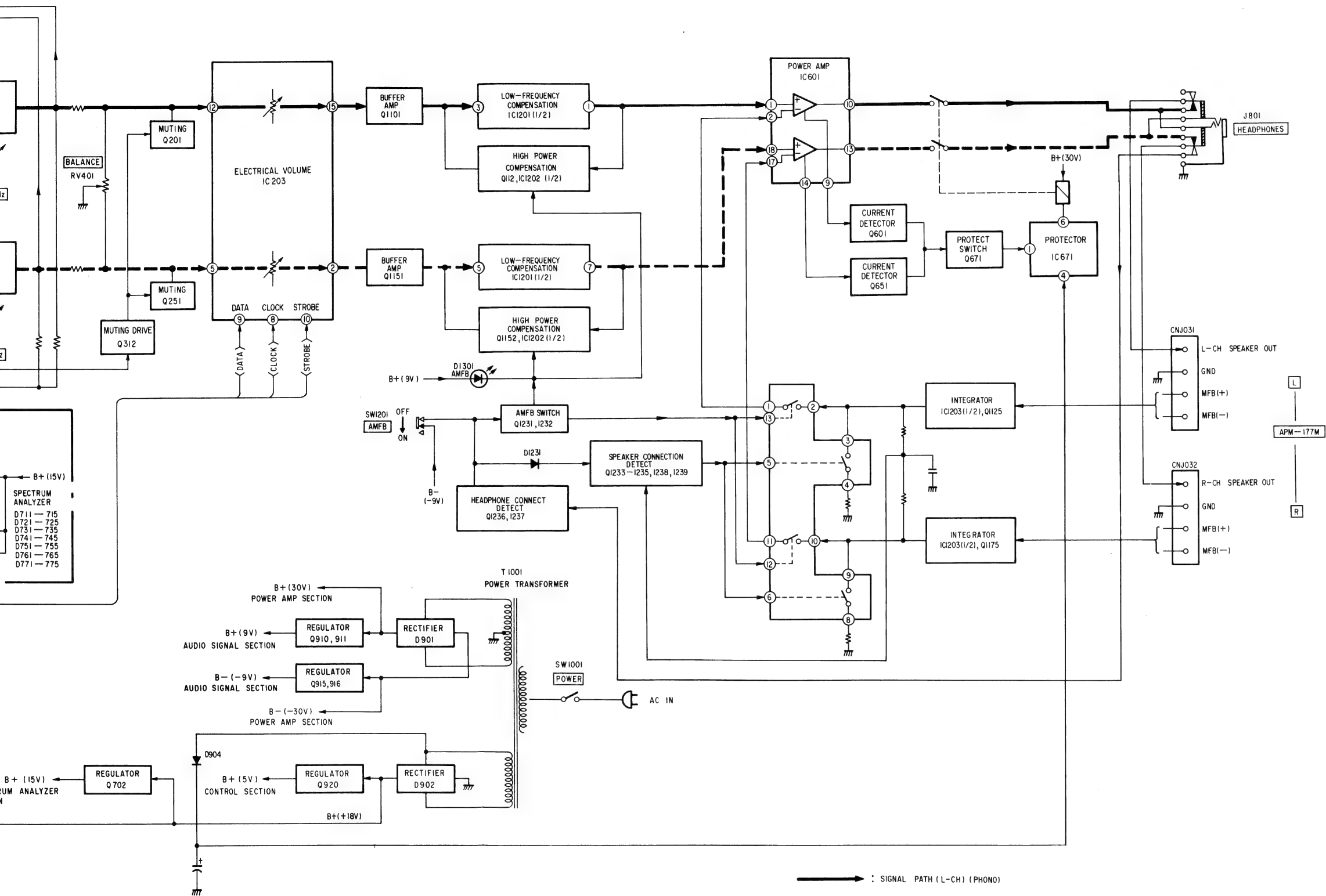
1. Pull out the knobs, and pull out LED.
2. Cut the new LED leads as long as the LED leads mounted previously.



## 4. BLOCK DIAGRAM







● Semiconductor Lead Layouts

<b>LC4966</b>  14 13 12 11 10 9 8 1 2 3 4 5 6 7 (Top view)	<b>HZ6A1L</b> <b>HZ7A1L</b> <b>HZ12A1</b> <b>HZ16-2L</b>  cathode anode	<b>AA5535S</b>  long short anode cathode
<b>M5226P</b> <b>TC9176P</b>  16 15 14 13 12 11 10 9 1 2 3 4 5 6 7 8 (Top view)	<b>PH302B</b>  anode cathode	<b>2SC1841-PA</b>  E C B
<b>LC7816H</b>  28 15 14 (Top view)	<b>RB402</b> Marking  anode cathode	<b>2SC634SP</b> <b>2SC2603F</b> <b>DTA144WS</b> <b>DTC144WS</b>  E C B
<b>M50765-440SP</b>  30 16 15 (Top view)	<b>RB602F</b>  anode cathode	<b>2SK381-E</b>  S G D
<b>CX20106A</b> <b>M5218L</b> <b>μPC1237H</b>  1 2 3 4 5 6 7 8	<b>LN450YP</b>  anode cathode	<b>2SD809</b> letter side  E C B
<b>IR2E31</b>  1 2 3 4 5 6 7 8 9	<b>STK4152II</b>  12 n	<b>2SB965-Q</b>  B C E
<b>1SS119</b>  cathode anode	<b>SEL2710K</b>  long short anode cathode	<b>2SD1288-Q</b> MARKING SIDE VIEW  B C E
<b>SEL2210S-C</b> <b>SEL2410E-C</b> <b>SEL2810A-C</b> <b>SEL2910A-C</b>  long short anode cathode	<b>2SA1175</b> letter side  E C B	



5. MOUNTING DIAGRAM

Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC011	J-4	Q325	H-13	D321	G-10	D745	H-8
IC101	D-17	Q326	H-12	D401	D-2	D751	G-7
IC201	H-11	Q601	B-3	D402	C-2	D752	G-7
IC202	G-10	Q601	C-22	D411	I-3	D753	G-7
IC203	I-11	Q651	D-21	D412	H-3	D754	G-7
IC301	I-13	Q671	D-22	D413	G-3	D755	G-8
IC401	G-4	Q701	I-6	D414	G-2	D761	G-6
IC402	F-4	Q702	E-6	D415	F-3	D762	G-7
IC403	E-4	Q910	I-24	D416	E-2	D763	G-7
IC601	B-22	Q911	I-23	D417	E-3	D764	G-7
IC671	C-23	Q915	H-22	D671	C-23	D765	G-8
IC711	I-8	Q916	H-22	D701	F-7	D771	F-7
IC721	H-8	Q920	H-21	D702	F-7	D772	F-7
IC731	H-8	Q1101	H-19	D703	F-7	D773	F-7
IC741	G-8	Q1102	I-18	D704	F-7	D774	F-7
IC751	G-8	Q1125	G-16	D705	E-8	D775	F-8
IC761	F-8	Q1151	H-20	D706	E-8	D781	C-6
IC771	F-8	Q1152	G-19	D711	I-7	D782	D-6
IC1201	G-18	Q1175	E-16	D712	I-7	D783	D-6
IC1202	F-18	Q1231	I-16	D713	I-7	D784	E-6
IC1203	F-18	Q1232	I-17	D714	I-7	D791	E-6
IC1204	G-15	Q1233	H-16	D715	I-8	D901	J-22
		Q1234	H-15	D721	I-7	D902	I-21
Q201	H-11	Q1235	I-16	D722	I-7	D904	I-21
Q251	I-12	Q1236	I-15	D723	I-7	D910	J-23
Q301	E-13	Q1237	H-15	D724	I-7	D915	I-22
Q302	J-12	Q1238	I-16	D725	I-8	D920	H-21
Q305	F-12	Q1239	I-16	D731	H-7	D1101	I-18
Q310	D-13			D732	H-7	D1102	I-17
Q311	D-13	D011	J-5	D733	H-7	D1125	F-18
Q312	G-10	D301	E-12	D734	H-7	D1151	G-19
Q320	H-13	D302	D-13	D735	H-8	D1152	G-19
Q321	H-13	D303	J-13	D741	H-7	D1175	F-18
Q322	H-13	D304	F-10	D742	H-7	D1231	I-15
Q323	G-12	D311	F-13	D743	H-7	D1232	I-15
Q324	H-12	D312	H-10	D744	H-7	D1301	J-15

Note:  
EA3: Saudi Arabia model  
AED: DENMARK model

Note: SCHEMATIC DIAGRAM

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{W}$  or less unless otherwise specified.
- : signal path.
- Components for right channel have same values as for left channel. Reference numbers are coded from 150, 250, 450, 650, 1150.
- : nonflammable resistor.
- : fusible resistor.
- : B+ bus.
- : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 k $\Omega$ /V).
- no mark: Not connecting speaker.
- < > : When inserting headphone plug into HEAD- PHONES JACK.
- ( ) : When AMFB switch is off connecting APM-177M speaker or a load resistor (1k — 1.5k) with speaker terminal.
- (( )) : When AMFB switch is ON connecting APM-177M speaker or a load resistor (1k — 1.5k) with speaker terminal.

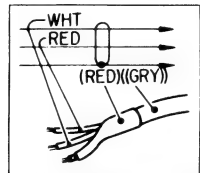
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in no-signal mode by using oscilloscope.
- Voltage variations may be noted due to normal production tolerances.

Switches

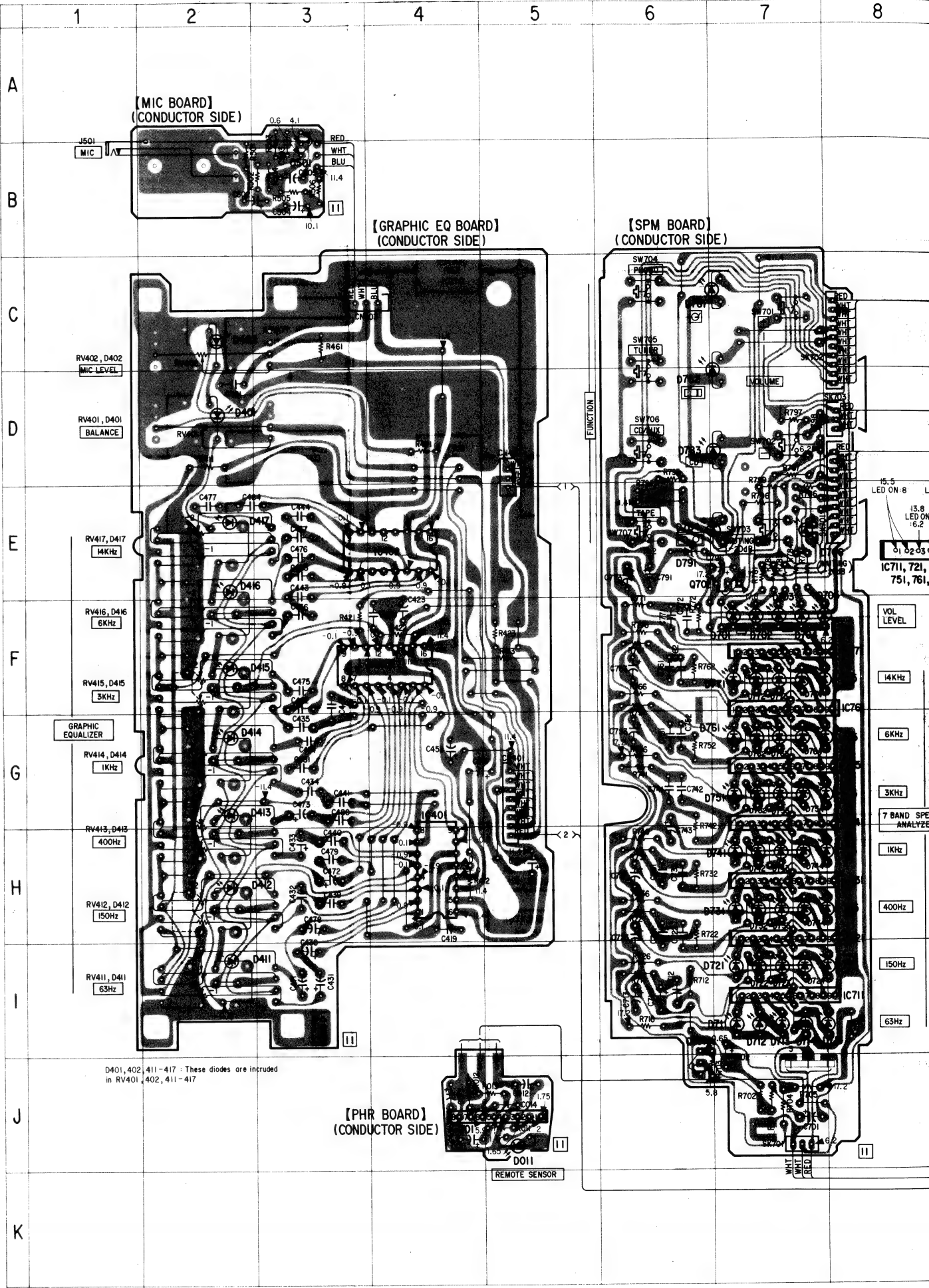
Ref. No.	Switch	Position
SW701	VOLUME UP	OFF
SW702	VOLUME DOWN	OFF
SW703	MUTING -20dB	OFF
SW704	PHONO	OFF
SW705	TUNER	OFF
SW706	CD/AUX	OFF
SW707	TAPE	OFF
SW1001	POWER	OFF
SW1002	VOLTAGE SELECTOR (E, EA3 model only)	240 V
SW1201	AMFB	OFF

Note: MOUNTING DIAGRAM

- Color code of sleeving over the end of the jacket.



- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.



Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC011	J-4	Q325	H-13	D321	G-10	D745	H-8
IC101	D-17	Q326	H-12	D401	D-2	D751	G-7
IC201	H-11	Q501	B-3	D402	C-2	D752	G-7
IC202	G-10	Q601	C-22	D411	I-3	D753	G-7
IC203	I-11	Q651	D-21	D412	H-3	D754	G-7
IC301	I-13	Q671	D-22	D413	G-3	D755	G-8
IC401	G-4	Q701	I-6	D414	G-2	D761	G-6
IC402	F-4	Q702	E-6	D415	F-3	D762	G-7
IC403	E-4	Q910	I-24	D416	E-2	D763	G-7
IC601	B-22	Q911	I-23	D417	E-3	D764	G-7
IC671	C-23	Q915	H-22	D671	C-23	D765	G-8
IC711	I-8	Q916	H-22	D701	F-7	D771	F-7
IC721	H-8	Q920	H-21	D702	F-7	D772	F-7
IC731	H-8	Q1101	H-19	D703	F-7	D773	F-7
IC741	G-8	Q1102	I-18	D704	F-7	D774	F-7
IC751	G-8	Q1125	G-16	D705	E-8	D775	F-8
IC761	F-8	Q1151	H-20	D706	E-8	D781	C-6
IC771	F-8	Q1152	G-19	D711	I-7	D782	D-6
IC1201	G-18	Q1175	E-16	D712	I-7	D783	D-6
IC1202	F-18	Q1231	I-16	D713	I-7	D784	E-6
IC1203	F-18	Q1232	I-17	D714	I-7	D791	E-6
IC1204	G-15	Q1233	H-16	D715	I-8	D901	J-22
		Q1234	H-15	D721	I-7	D902	I-21
		Q1235	I-16	D722	I-7	D904	I-21
Q201	H-11	Q1236	I-15	D723	I-7	D910	J-23
Q251	I-12	Q1237	H-15	D724	I-7	D915	I-22
Q301	E-13	Q1238	I-16	D725	I-8	D920	H-21
Q302	J-12	Q1239	I-16	D731	H-7	D1101	I-18
Q305	F-12			D732	H-7	D1102	I-17
Q310	D-13	D011	J-5	D733	H-7	D1125	F-18
Q311	D-13	D301	E-12	D734	H-7	D1151	G-19
Q312	G-10	D302	D-13	D735	H-8	D1152	G-19
Q320	H-13	D303	J-13	D741	H-7	D1175	F-18
Q321	H-13	D304	F-10	D742	H-7	D1231	I-15
Q322	H-13	D311	F-13	D743	H-7	D1232	I-15
Q323	G-12	D312	H-10	D744	H-7	D1301	J-15

Note:  
EA3: Saudi Arabia model  
AED: DENMARK model

Note: SCHEMATIC DIAGRAM

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- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- : signal path.
- Components for right channel have same values as for left channel. Reference numbers are coded from 150, 250, 450, 650, 1150.
- : nonflammable resistor.
- : fusible resistor.
- : B+ bus.
- - - : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50  $\text{k}\Omega/\text{V}$ ).  
no mark: Not connecting speaker.  
< > : When inserting headphone plug into HEAD-  
PHONES JACK.  
( ) : When AMFB switch is off connecting APM-177M  
speaker or a load resistor (1k — 1.5k) with  
speaker terminal.  
(( )) : When AMFB switch is ON connecting APM-177M  
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speaker terminal.

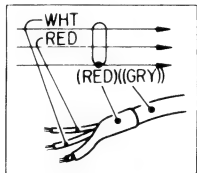
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tion tolerances.
- Waveforms are taken to ground in no-signal mode by  
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Voltage variations may be noted due to normal produc-  
tion tolerances.

Switches

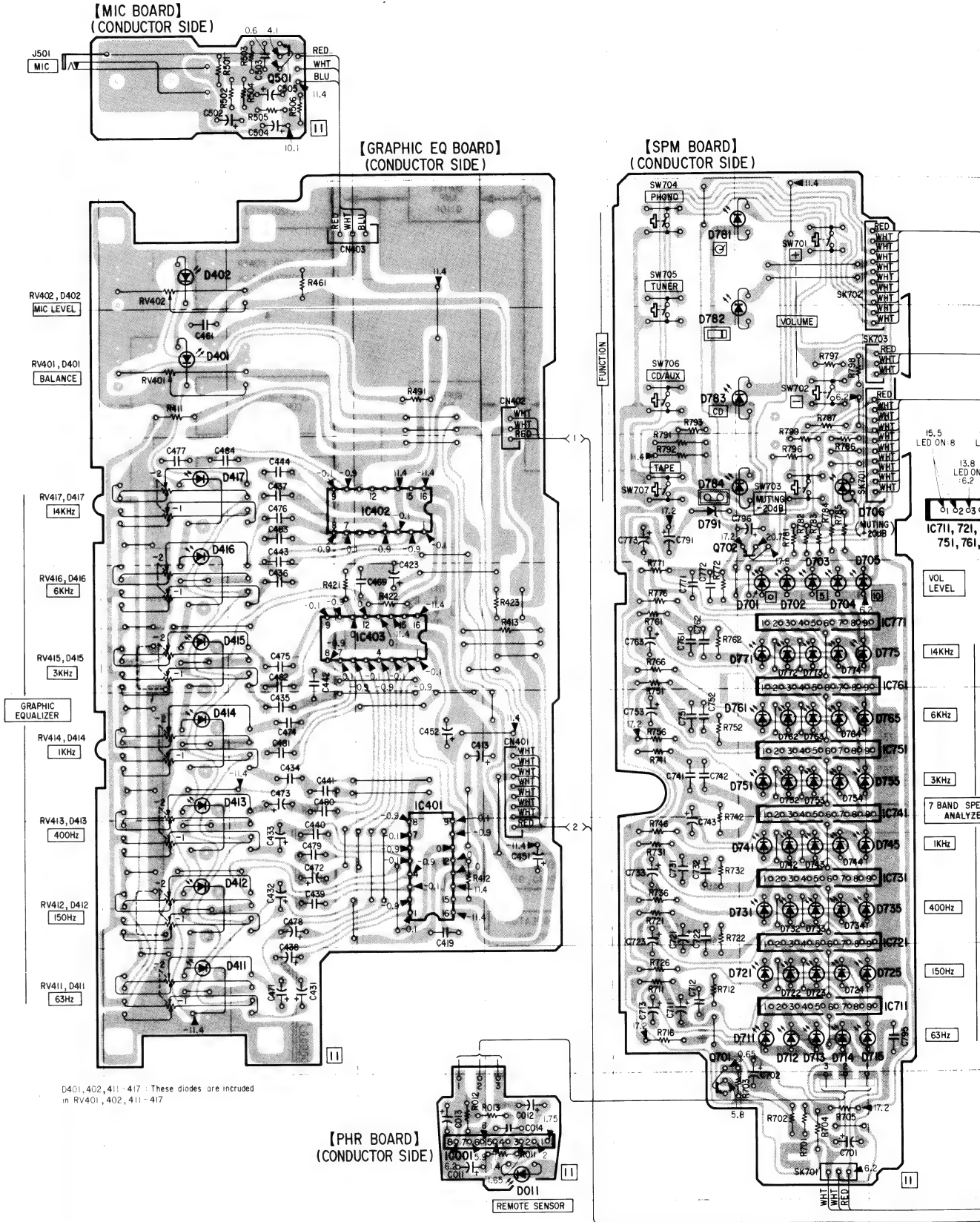
Ref. No.	Switch	Position
SW701	VOLUME UP	OFF
SW702	VOLUME DOWN	OFF
SW703	MUTING -20 dB	OFF
SW704	PHONO	OFF
SW705	TUNER	OFF
SW706	CD/AUX	OFF
SW707	TAPE	OFF
SW1001	POWER	OFF
SW1002	VOLTAGE SELECTOR (E, EA3 model only)	240 V
SW1201	AMFB	OFF

Note: MOUNTING DIAGRAM

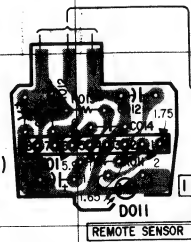
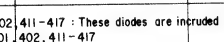
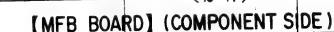
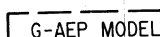
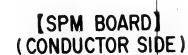
- Color code of sleeving over the end of the jacket.



- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.

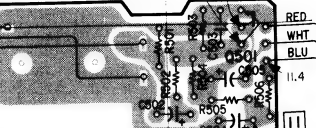




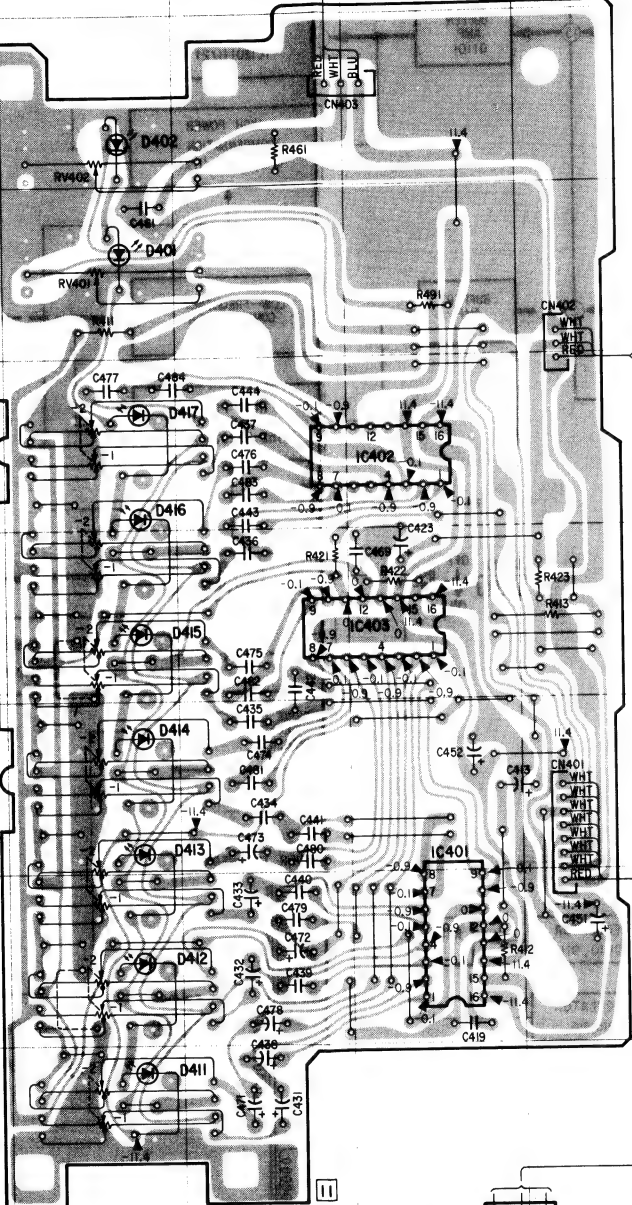




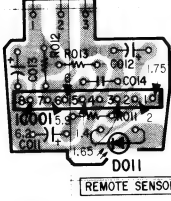
MIC BOARD  
(CONDUCTOR SIDE)



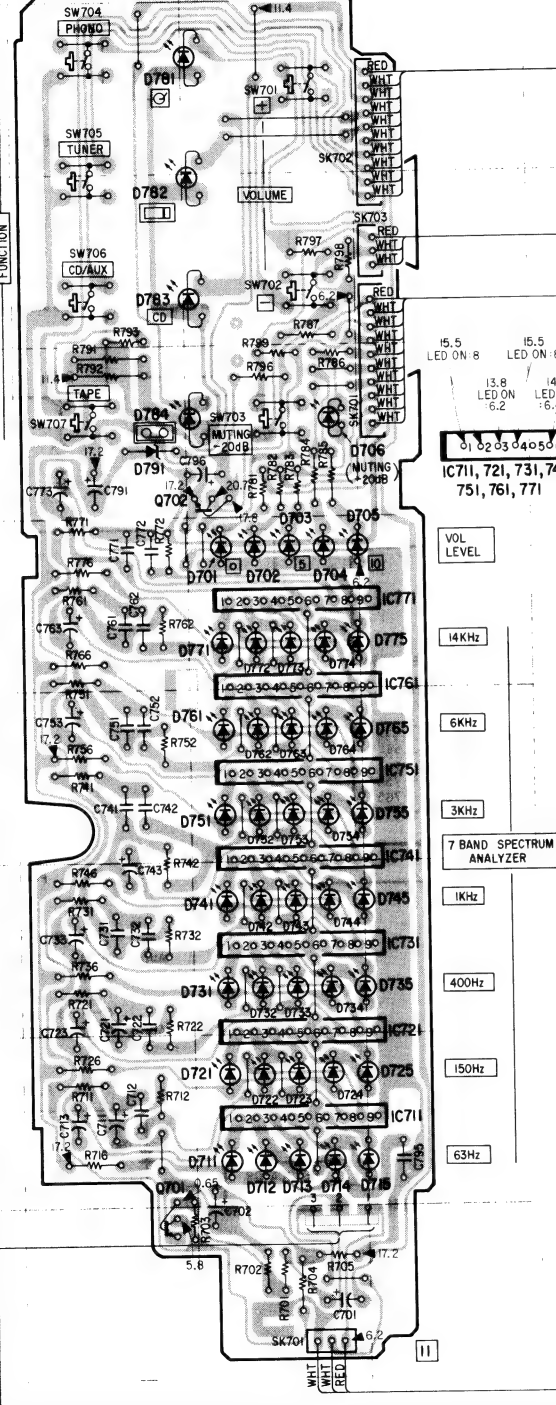
[GRAPHIC EQ BOARD]  
(CONDUCTOR SIDE)



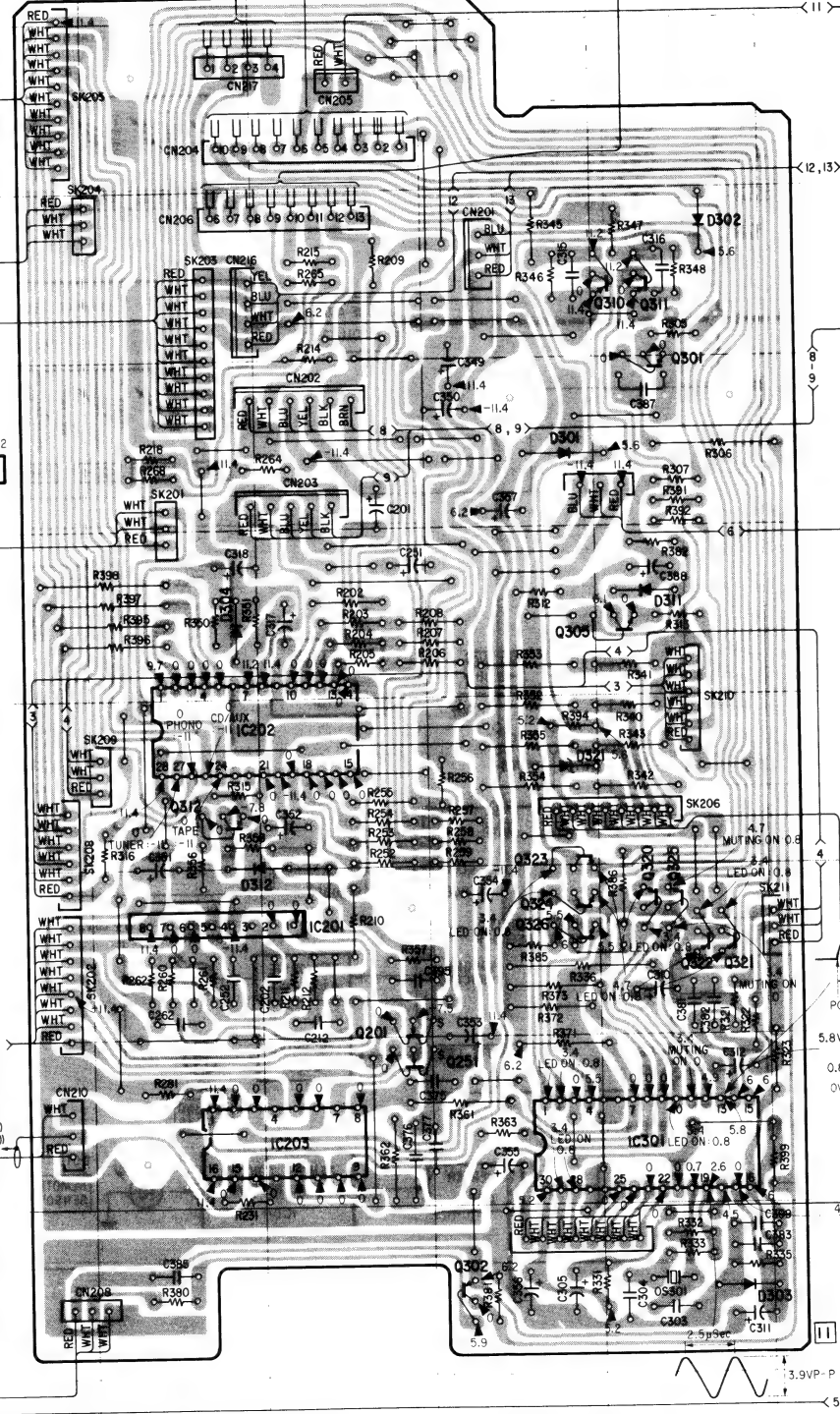
[PHR BOARD]  
(CONDUCTOR SIDE)



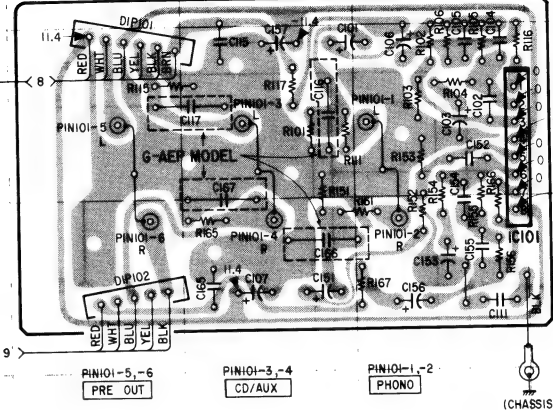
[SPM BOARD]  
(CONDUCTOR SIDE)



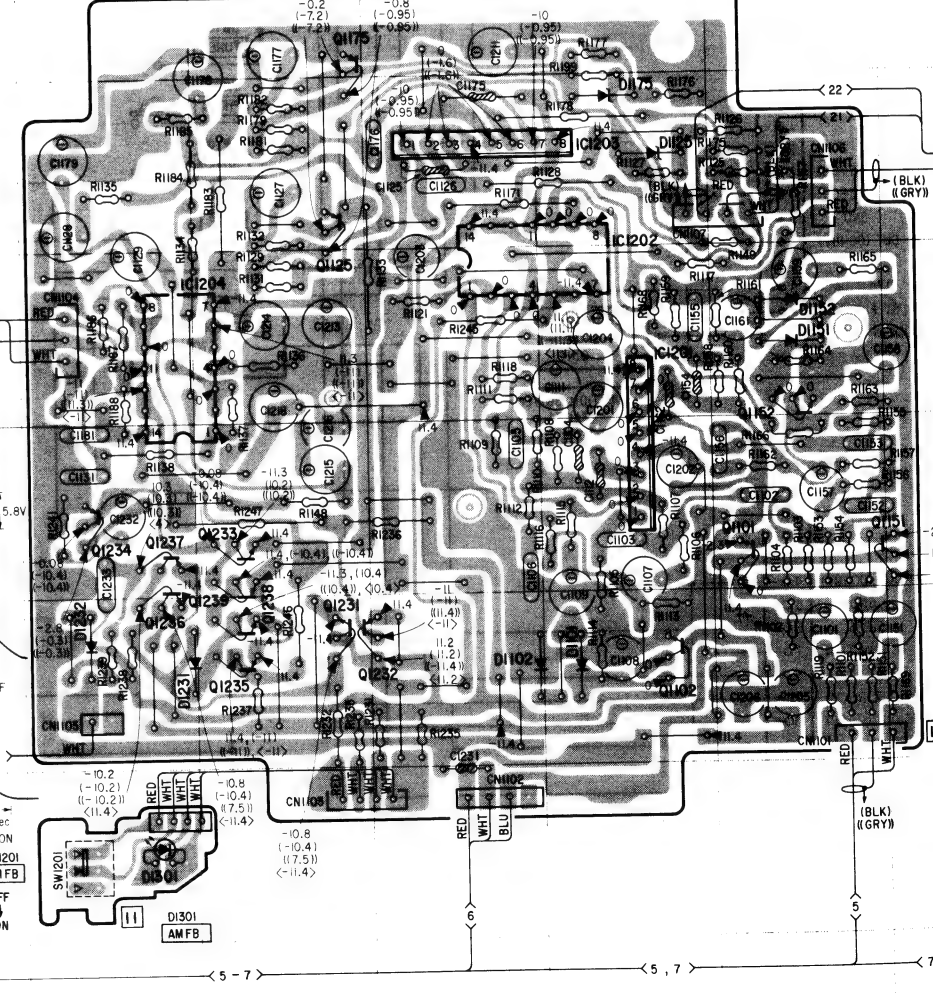
[CONTROL BOARD]  
(CONDUCTOR SIDE)



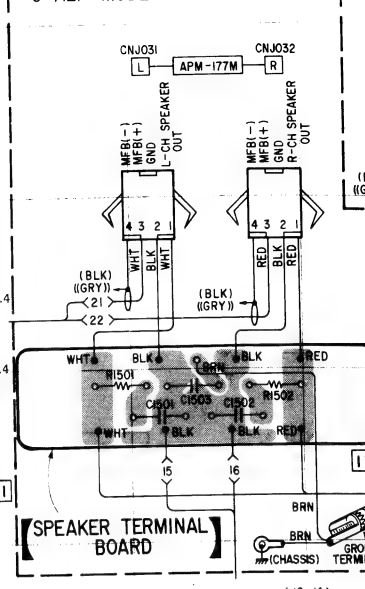
[PHONO BOARD]  
(CONDUCTOR SIDE)



[MFB BOARD] (COMPONENT SIDE)



G-AEP MODEL



[SPEAKER TERMINAL BOARD]





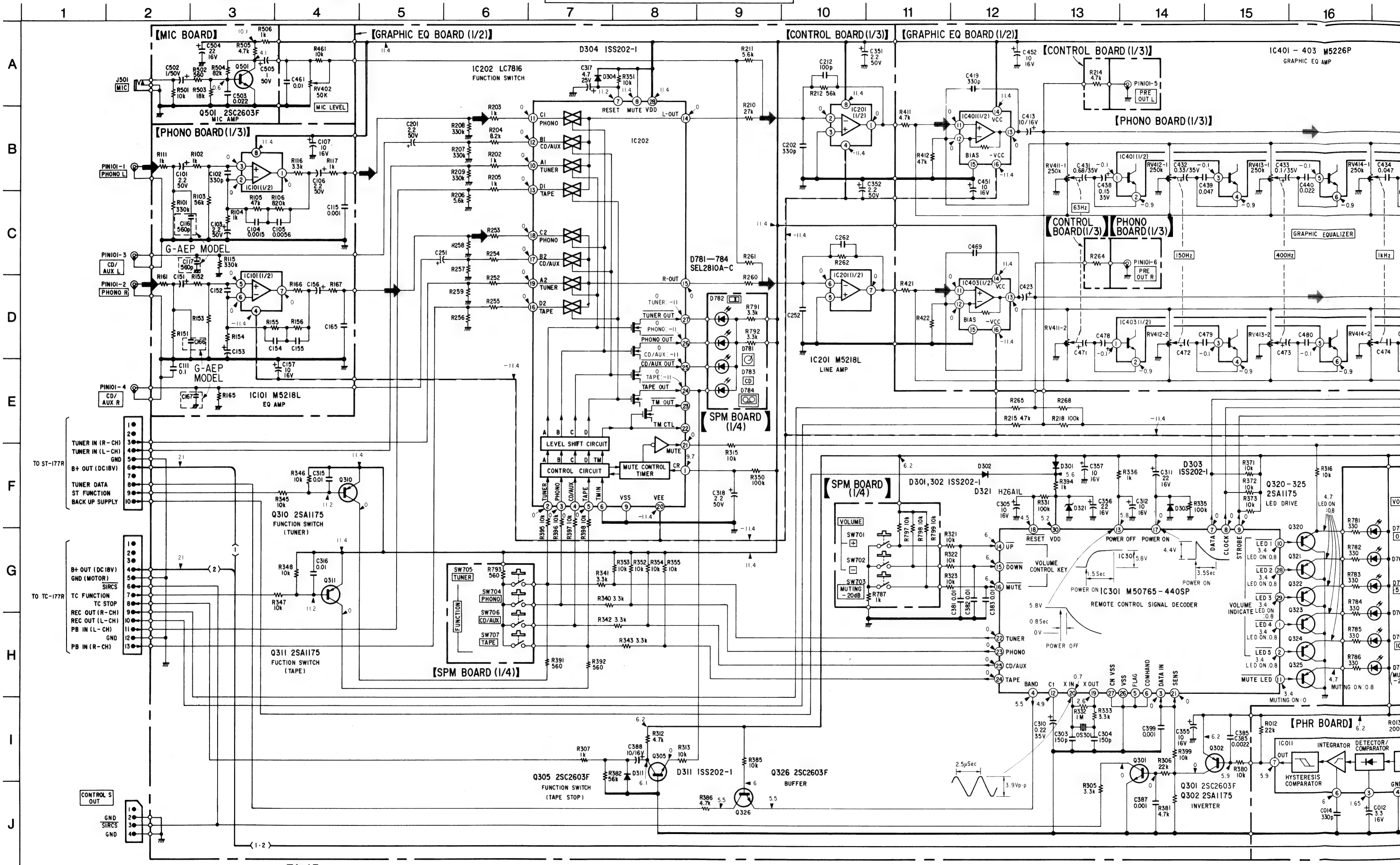


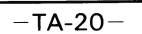




## 6. SCHEMATIC DIAGRAM

• See page TA-13 for notes.

FH-150R  
TA-177RFH-150R  
TA-177R

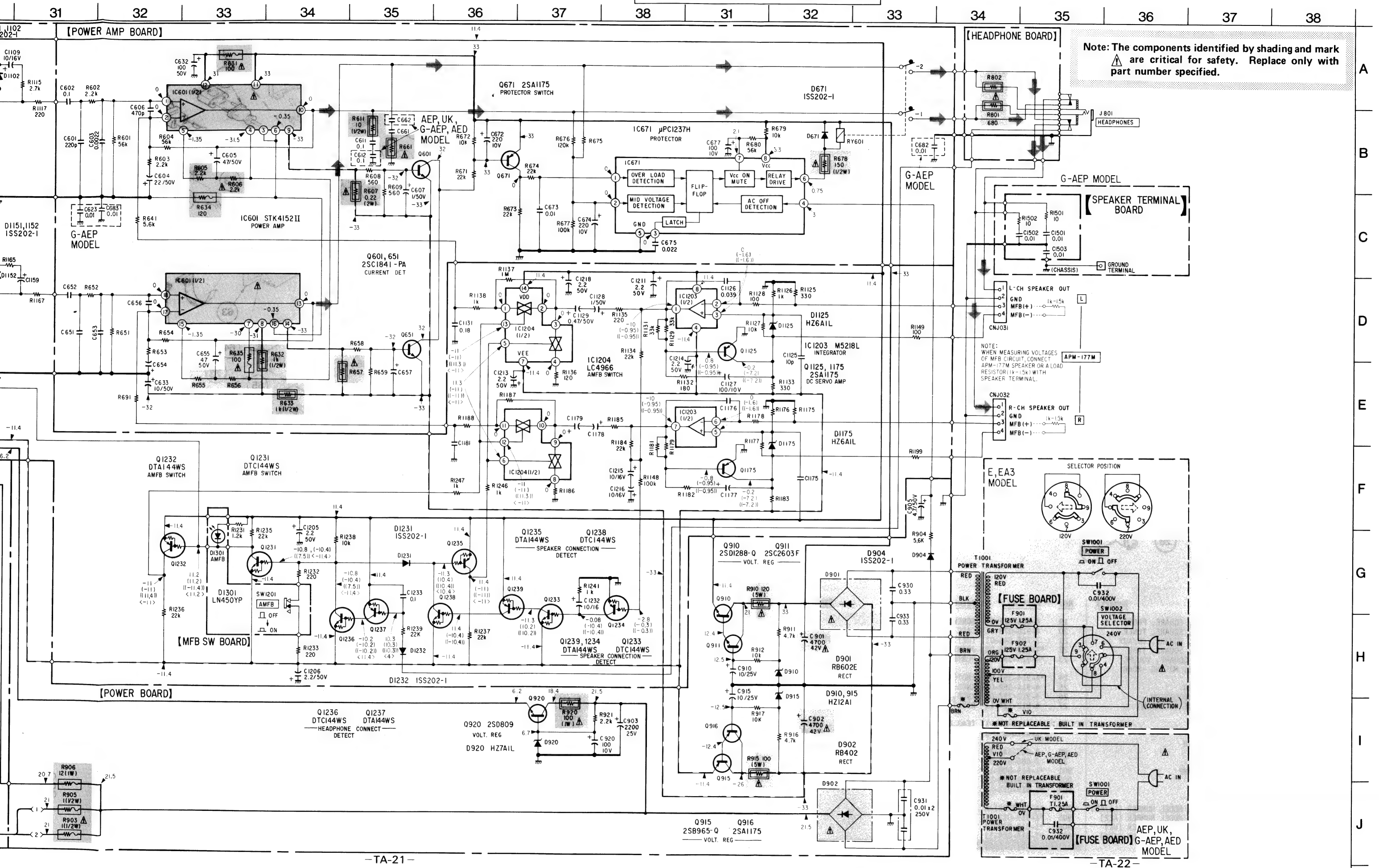






FH-150R  
TA-177R

FH-150R  
TA-177R






## 7. EXPLODED VIEWS AND PARTS LIST

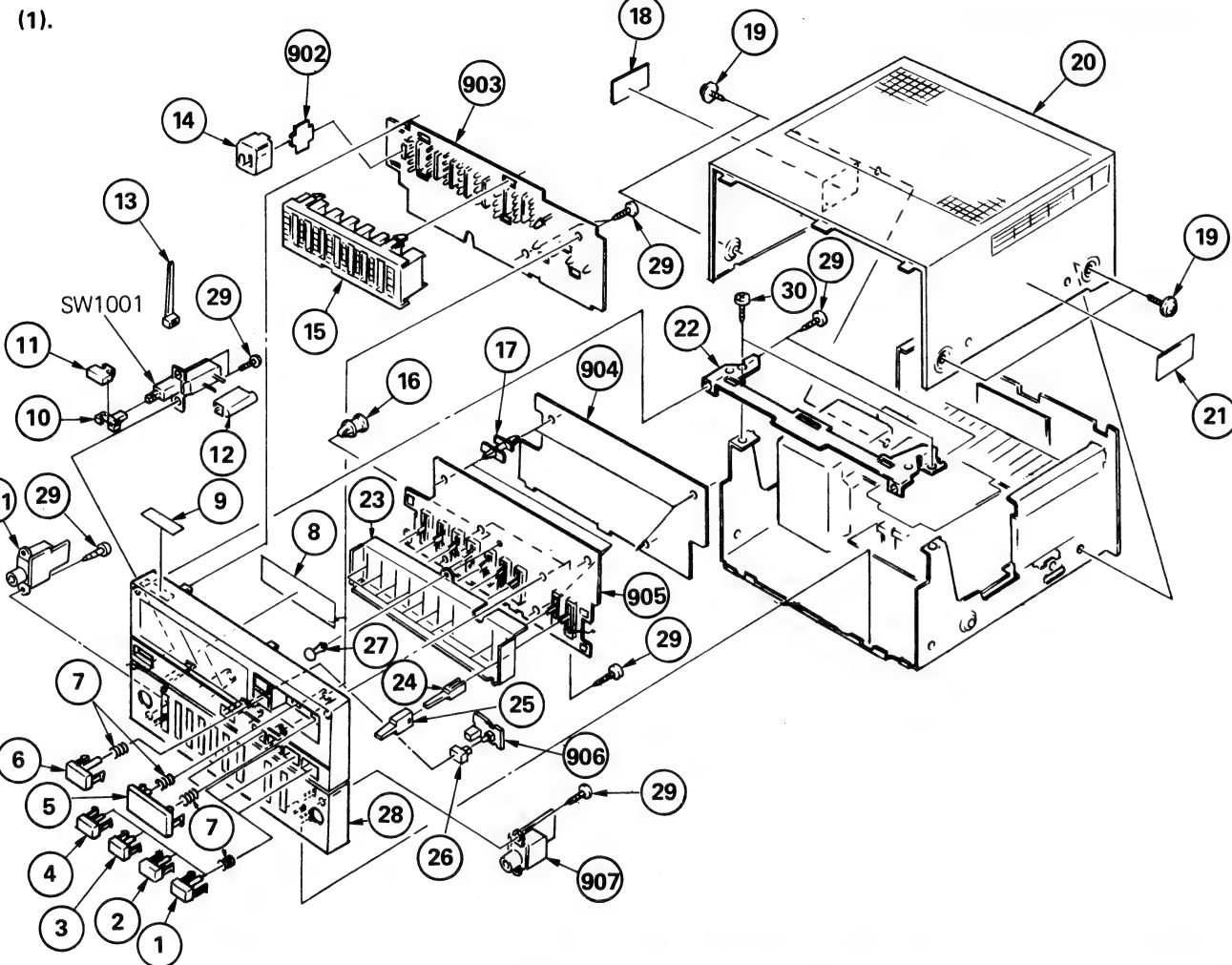
## NOTE:


The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

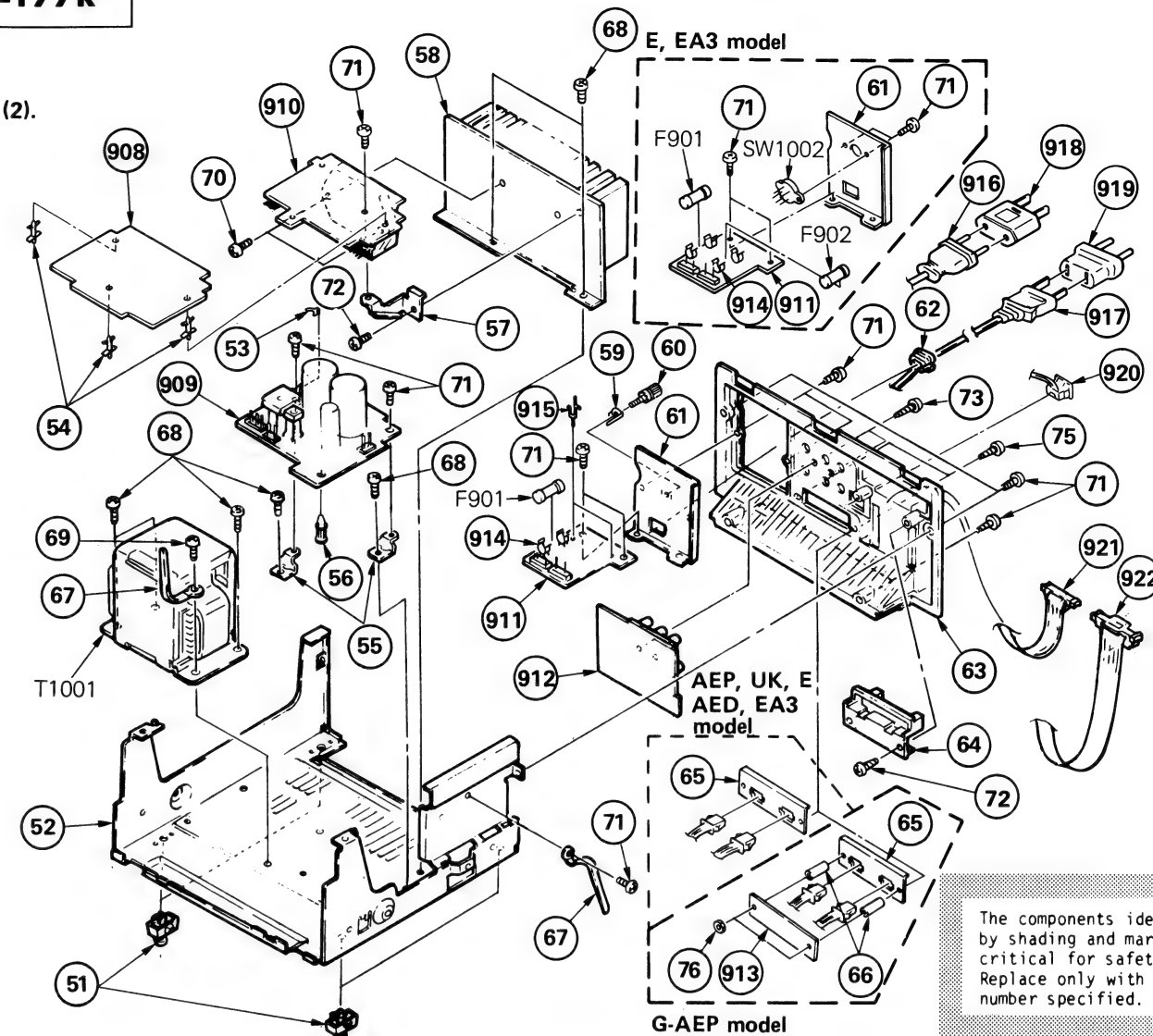
The construction parts of an assembled part are indicated with a collation number in the remark column.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-914-350-31	BUTTON (FUNCTION), SQUARE, PHONO		19	4-886-821-01	SCREW, M3 CASE	
2	4-914-350-21	BUTTON (FUNCTION), SQUARE, TUNER		20	4-910-078-31	CASE	
3	4-914-350-11	BUTTON (FUNCTION), SQUARE, CD/AUX		21	3-703-845-01	(UK)...LABEL (N)(UIC), MAIN CAUTION	
4	4-914-350-01	BUTTON (FUNCTION), SQUARE, TAPE		22	*4-910-068-01	JOINT	
5	4-910-094-11	BUTTON (UP-DOWN), SQUARE, VOLUME		23	*4-914-353-01	PLATE, BLIND	
6	4-910-087-61	BUTTON (B), SQUARE, MUTING -20dB		24	*4-914-351-01	INDICATOR	
7	4-886-032-00	SPRING, COMPRESSION		25	4-914-352-01	KNOB, SLIDE	
8	*4-910-099-11	PLATE (8 GANG), INDICATION		26	4-910-392-01	KNOB, SQUARE, AMFB	
9	3-701-690-00	(UK)...LABEL (MADE IN JAPAN)		27	4-812-134-11	RIVET NYLON, 3.5	
10	4-910-058-01	JOINT, KNOB		28	X-4910-050-1	(EA3,E).....PANEL ASSY, FRONT	
11	4-910-056-11	KNOB, POWER			X-4910-050-2	(G-AEP,AEP,UK,AED)...PANEL ASSY, FRONT	
12	3-575-524-00	COVER, POWER SWITCH		29	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
13	3-701-748-00	CLAMP		30	7-685-871-01	SCREW +BVTT 3X6 (S)	
14	*4-910-301-01	PLATE, SHIELD		901	*1-619-008-11	PC BOARD, HP	
15	*4-910-306-01	HOUSE (8 GANG), LAMP		902	*1-619-014-11	PC BOARD, PHR	
16	*3-669-610-00	SPACER		903	*1-619-013-11	PC BOARD, SPM	
17	3-659-619-01	HOLDER, PC BOARD					
18	*4-914-325-01	(E,EA3).....LABEL, MODEL NUMBER (E2/E3)		904	*A-4375-251-A	MOUNTED PCB, CONTROL	
	*4-914-326-11	(AEP,AED)...LABEL, MODEL NUMBER (AE2)		905	*1-619-011-11	PC BOARD, GRAPHIC EQ	
	*4-914-327-01	(UK).....LABEL, MODEL NUMBER (UK)		906	*1-619-039-11	PC BOARD, MFB SW	
	*4-914-328-01	(G-AEP).....LABEL, MODEL NUMBER (AE4)		907	*1-619-009-11	PC BOARD, MIC	
					 SW1001.1-553-318-51	SWITCH, PUSH (AC POWER)(1 KEY), POWER	


(2).



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	X-4902-937-1	FOOT ASSY, RUBBER		76	7-684-023-04	(G-AEP)....N 3, TYPE2	
52	*4-902-974-01	CHASSIS		908	*A-4388-532-A	MOUNTED PCB, MFB	
53	*4-904-446-01	PLATE, GROUND		909	*A-4394-377-A	(G-AEP,AEP,UK,AED)...MOUNTED PCB, POWER	
54	3-659-619-01	HOLDER, PC BOARD			*A-4394-379-A	(EA3,E).....MOUNTED PCB, POWER	
55	*4-910-393-01	BRACKET, PC BOARD		910	*A-4388-528-A	(AEP,UK,AED)...MOUNTED PCB, POWER AMP	
56	*3-669-610-00	SPACER			*A-4388-530-A	(G-AEP).....MOUNTED PCB, POWER AMP	
57	*4-910-064-01	BRACKET (H), PC BOARD			*A-4388-531-A	(EA3,E).....MOUNTED PCB, POWER AMP	
58	*4-910-077-01	HEAT SINK		911	*1-618-060-11	PC BOARD, FUSE	
59	3-701-993-00	(G-AEP)...SPACER, TERMINAL		912	*1-619-010-11	PC BOARD, PHONO	
60	3-706-165-00	(G-AEP)...SCREW		913	*1-619-634-11	(G-AEP)...MOUNTED PCB, SPEAKER TERMINAL	
61	*4-910-073-01	(G-AEP,AEP,UK,AED)...BRACKET, INLET		914	1-533-162-00	HOLDER, FUSE	
	*4-910-073-11	(EA3,E).....BRACKET, INLET		915	1-535-416-00	(G-AEP,AEP,UK,AED)...TERMINAL	
62	3-703-244-00	(G-AEP,AEP,UK,AED,EA3)		916	△.1-534-817-XX	(G-AEP,AEP,AED,EA3)	
	....BUSHING(2104), CORD					...CORD, POWER, EULO PLUG	
	3-703-571-00	(E).....BUSHING(4516), CORD		917	△.1-551-472-00	(E)....CORD, POWER	
63	*4-910-079-11	PLATE, JACK			△.1-551-884-00	(UK)....CORD, POWER	
64	*4-910-302-01	HOLDER (H), WIRE		918	△.1-506-409-00	(EA3)...AC PLUG, ADAPTOR	
65	*4-910-390-01	BRACKET, MFB		919	△.1-526-565-00	(E)....AC PLUG, ADAPTOR	
66	3-654-603-00	(G-AEP)...SPACER		920	1-558-350-21	(G-AEP,AEP,UK,E)...CORD	
67	*3-703-150-11	CLAMP				(WITH CONNECTOR), CONTROL S OUT	
68	7-682-546-04	SCREW +BVTT 3X5 (S)		921	1-557-898-11	CORD (WITH CONNECTOR), 10P (BLUE)	
69	7-685-751-09	SCREW +BVTT 3X6 (S)		922	1-557-899-11	CORD (WITH CONNECTOR), 13P (GRAY)	
70	7-685-650-71	SCREW +BVTP 3X16 TYPE2 IT-3		F901	△.1-532-285-00	FUSE, TIME-LAG, 1.25A	
71	7-685-871-01	SCREW +BVTT 3X6 (S)		F902	△.1-532-285-00	(EA3,E)...FUSE, TIME-LAG, 1.25A	
72	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3		△SW1002.1-526-576-51	(EA3,E)...SELECTOR, POWER VOLTAGE		
73	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S		T1001△.1-448-133-11	(EA3,E)...TRANSFORMER, POWER		
75	7-685-877-01	(G-AEP)...SCREW +BVTT 3X20		T1001△.1-448-134-11	(G-AEP,AEP,UK,AED)...TRANSFORMER, POWER		
	7-685-871-01	(AEP,UK,AED,EA3,E)...SCREW +BVTT 3X6 (S)					

## 8. ELECTRIC

## NOTE:

Items marked  they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are any set such as a typical circuit capacitors and circuits may be

Ref.No. Part No.




901 \*1-619-  
902 \*1-619-  
903 \*1-619-  
904 \*A-4375-



905 \*1-619-  
906 \*1-619-  
907 \*1-619-  
908 \*A-4388-

909 \*A-4394-  
\*A-4394-

910 \*A-4388-  
\*A-4388-  
\*A-4388-

911 \*1-618-  
912 \*1-619-  
913 \*1-619-  
914 1-533-  
915 1-535-

916 .1-534-  
917 .1-551-  
918 .1-551-

918 .1-506-  
919 .1-526-  
920 1-558-

921 1-557-  
922 1-557-

BP002 \*1-535-  
BP901 \*1-535-  
BP902 \*1-535-  
BP903 \*1-535-

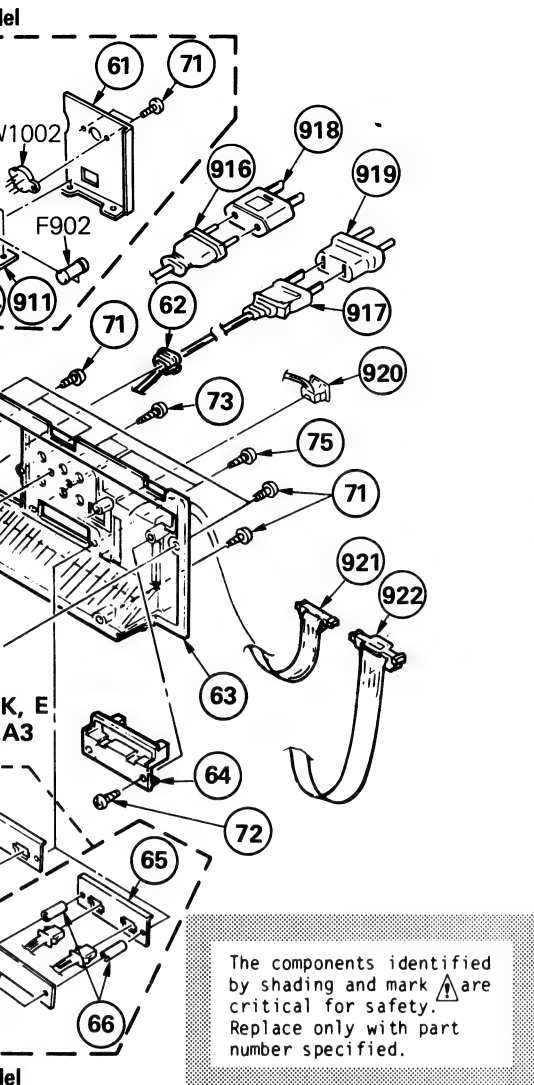
C011 1-131-  
C012 1-131-  
C013 1-131-

C014 1-102-  
C101 1-123-  
C102 1-162-

C103 1-123-  
C104 1-110-  
C105 1-110-

C106 1-123-  
C107 1-123-  
C111 1-136-

C115 1-162-  
C116 1-162-  
C117 1-162-



## 8. ELECTRICAL PARTS LIST

### NOTE:

Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

### CAPACITORS:

MF:  $\mu$ F, PF:  $\mu$ F.

### RESISTORS

All resistors are in ohms.

F: nonflammable

### COILS

MMH: mH, UH:  $\mu$ H

### SEMICONDUCTORS

In each case, U:  $\mu$ , for example:

UA...:  $\mu$ A..., UPA...:  $\mu$ PA..., UPC...:  $\mu$ PC,

UPD...:  $\mu$ PD...

### Note:

EA3: Saudi Arabia model

AED: DENMARK model

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

### ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	*1-619-008-11	PC BOARD, HP
902	*1-619-014-11	PC BOARD, PHR
903	*1-619-013-11	PC BOARD, SPM
904	*A-4375-251-A	MOUNTED PCB, CONTROL
905	*1-619-011-11	PC BOARD, GRAPHIC EQ
906	*1-619-039-11	PC BOARD, MFB SW
907	*1-619-009-11	PC BOARD, MIC
908	*A-4388-532-A	MOUNTED PCB, MFB
909	*A-4394-377-A	(G-AEP, AEP, UK, AED) ...MOUNTED PCB, POWER
	*A-4394-379-A	(EA3, E) ...MOUNTED PCB, POWER
910	*A-4388-528-A	(AEP, UK, AED) ...MOUNTED PCB, POWER AMP
	*A-4388-530-A	(G-AEP) ...MOUNTED PCB, POWER AMP
	*A-4388-531-A	(EA3, E) ...MOUNTED PCB, POWER AMP
911	*1-618-060-11	PC BOARD, FUSE
912	*1-619-010-11	PC BOARD, PHONO
913	*1-619-634-11	(G-AEP) ...MOUNTED PCB, SPEAKER TERMINAL
914	1-533-162-00	HOLDER, FUSE
915	1-535-416-00	(G-AEP, AEP, UK, AED) ...TERMINAL
916	$\Delta$ 1-534-817-XX	(G-AEP, AEP, AED, EA3) ...CORD, POWER, EULO PLUG
917	$\Delta$ 1-551-472-00	(E) ...CORD, POWER
	$\Delta$ 1-551-884-00	(UK) ...CORD, POWER
918	$\Delta$ 1-506-409-00	(EA3) ...AC PLUG, ADAPTOR
919	$\Delta$ 1-526-565-00	(E) ...AC PLUG, ADAPTOR
920	1-558-350-21	(G-AEP, AEP, UK, E) ...CORD (WITH CONNECTOR), CONTROL S OUT
921	1-557-898-11	CORD (WITH CONNECTOR), 10P (BLUE)
922	1-557-899-11	CORD (WITH CONNECTOR), 13P (GRAY)

No. Description Remarks

023-04 (G-AEP) ...N 3, TYPE2

532-A MOUNTED PCB, MFB

4377-A (G-AEP, AEP, UK, AED) ...MOUNTED PCB, POWER

4379-A (EA3, E) ...MOUNTED PCB, POWER

4528-A (AEP, UK, AED) ...MOUNTED PCB, POWER AMP

4530-A (G-AEP) ...MOUNTED PCB, POWER AMP

4531-A (EA3, E) ...MOUNTED PCB, POWER AMP

060-11 PC BOARD, FUSE

010-11 PC BOARD, PHONO

634-11 (G-AEP) ...MOUNTED PCB, SPEAKER TERMINAL

162-00 HOLDER, FUSE

416-00 (G-AEP, AEP, UK, AED) ...TERMINAL

817-XX (G-AEP, AEP, AED, EA3) ...CORD, POWER, EULO PLUG

472-00 (E) ...CORD, POWER

884-00 (UK) ...CORD, POWER

409-00 (EA3) ...AC PLUG, ADAPTOR

565-00 (E) ...AC PLUG, ADAPTOR

350-21 (G-AEP, AEP, UK, E) ...CORD

(WITH CONNECTOR), CONTROL S OUT

898-11 CORD (WITH CONNECTOR), 10P (BLUE)

899-11 CORD (WITH CONNECTOR), 13P (GRAY)

285-00 FUSE, TIME-LAG, 1.25A

285-00 (EA3, E) ...FUSE, TIME-LAG, 1.25A

576-51 (EA3, E) ...SELECTOR, POWER VOLTAGE

133-11 (EA3, E) ...TRANSFORMER, POWER

134-11 (G-AEP, AEP, UK, AED) ...TRANSFORMER, POWER

### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C151	1-123-612-00	ELECT	2.2MF	20%	50V
C152	1-162-288-31	CERAMIC	330PF	10%	50V
C153	1-123-612-00	ELECT	2.2MF	20%	50V
C154	1-110-197-00	MYLAR	0.0015MF	5%	50V
C155	1-110-204-00	MYLAR	0.0056MF	5%	50V
C156	1-123-612-00	ELECT	2.2MF	20%	50V
C157	1-123-617-00	ELECT	10MF	20%	16V
C165	1-162-294-31	CERAMIC	0.001MF	10%	50V
C166	1-162-291-31	(G-AEP) ...CERAMIC	560PF	10%	50V
C167	1-162-291-31	(G-AEP) ...CERAMIC	560PF	10%	50V
C201	1-123-612-00	ELECT	2.2MF	20%	50V
C202	1-162-288-31	CERAMIC	330PF	10%	50V
C212	1-162-282-31	CERAMIC	100PF	10%	50V
C251	1-123-612-00	ELECT	2.2MF	20%	50V
C252	1-162-288-31	CERAMIC	330PF	10%	50V
C262	1-162-282-31	CERAMIC	100PF	10%	50V
C303	1-162-284-31	CERAMIC	150PF	10%	50V
C304	1-162-284-31	CERAMIC	150PF	10%	50V
C305	1-123-617-00	ELECT	10MF	20%	16V
C310	1-131-343-00	TANTALUM	0.22MF	10%	35V
C311	1-123-622-00	ELECT	22MF	20%	16V
C312	1-123-617-00	ELECT	10MF	20%	16V
C315	1-162-306-31	CERAMIC	0.01MF	30%	16V
C316	1-162-306-31	CERAMIC	0.01MF	30%	16V
C317	1-123-616-00	ELECT	4.7MF	20%	25V
C318	1-123-612-00	ELECT	2.2MF	20%	50V
C349	1-123-622-00	ELECT	22MF	20%	16V
C350	1-123-622-00	ELECT	22MF	20%	16V
C351	1-123-612-00	ELECT	2.2MF	20%	50V
C352	1-123-612-00	ELECT	2.2MF	20%	50V
C353	1-123-612-00	ELECT	2.2MF	20%	50V
C354	1-123-612-00	ELECT	2.2MF	20%	50V
C355	1-123-617-00	ELECT	10MF	20%	16V
C356	1-123-622-00	ELECT	22MF	20%	16V
C357	1-123-617-00	ELECT	10MF	20%	16V
C375	1-162-302-31	CERAMIC	0.0022MF	30%	16V
C376	1-162-302-31	CERAMIC	0.0022MF	30%	16V
C377	1-162-302-31	CERAMIC	0.0022MF	30%	16V
C381	1-162-306-31	CERAMIC	0.01MF	30%	16V
C382	1-162-306-31	CERAMIC	0.01MF	30%	16V
C383	1-162-306-31	CERAMIC	0.01MF	30%	16V
C385	1-162-302-31	CERAMIC	0.0022MF	30%	16V
C387	1-162-294-31	CERAMIC	0.001MF	10%	50V
C388	1-123-617-00	ELECT	10MF	20%	16V
C395	1-162-306-31	CERAMIC	0.01MF	30%	16V

### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C399	1-162-294-31	CERAMIC	0.001MF	10%	50V
C413	1-131-371-00	TANTALUM	10MF	10%	16V
C419	1-162-288-31	CERAMIC	330PF	10%	50V
C423	1-131-371-00	TANTALUM	10MF	10%	16V
C431	1-131-346-00	TANTALUM	0.68MF	10%	35V
C432	1-131-344-00	TANTALUM	0.33MF	10%	35V
C433	1-131-341-00	TANTALUM	0.1MF	10%	35V
C434	1-136-161-00	FILM	0.047MF	5%	50V
C435	1-162-306-31	CERAMIC	0.01MF	20%	16V
C436	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C437	1-162-303-31	CERAMIC	0.0033MF	20%	16V
C438	1-131-342-00	TANTALUM	0.15MF	10%	35V
C439	1-136-161-00	FILM	0.047MF	5%	50V
C440	1-162-596-00	CERAMIC	0.022MF	25V	
C441	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C442	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C443	1-162-294-31	CERAMIC	0.001MF	10%	50V
C444	1-162-291-31	CERAMIC	560PF	10%	50V
C451	1-131-371-00	TANTALUM	10MF	10%	16V
C452	1-131-371-00	TANTALUM	10MF	10%	16V
C461	1-162-306-31	CERAMIC	0.01MF	30%	16V
C469	1-162-288-31	CERAMIC	330PF	10%	50V
C471	1-131-346-00	TANTALUM	0.68MF	10%	35V
C472	1-131-344-00	TANTALUM	0.33MF	10%	35V
C473	1-131-341-00	TANTALUM	0.1MF	10%	35V
C474	1-136-161-00	FILM	0.047MF	5%	50V
C475	1-162-306-31	CERAMIC	0.01MF	20%	16V
C476	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C477	1-162-303-31	CERAMIC	0.0033MF	20%	16V
C478	1-131-342-00	TANTALUM	0.15MF	10%	35V
C479	1-136-161-00	FILM	0.047MF	5%	50V
C480	1-162-596-00	CERAMIC	0.022MF	25V	
C481	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C482	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C483	1-162-294-31	CERAMIC	0.001MF	10%	50V
C484	1-162-291-31	CERAMIC	560PF	10%	50V
C502	1-123-611-00	ELECT	1MF	20%	50V
C503	1-161-055-00	CERAMIC	0.022MF	20%	25V
C504	1-123-622-00	ELECT	22MF	20%	16V
C505	1-123-611-00	ELECT	1MF	20%	50V
C601	1-162-286-31	CERAMIC	220PF	10%	50V
C602	1-136-165-00	FILM	0.1MF	5%	50V
C603	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C604	1-123-357-00	ELECT	22MF	20%	50V
C605	1-123-359-00	ELECT	47MF	20%	50V
C606	1-162-290-31	CERAMIC	470PF	10%	50V
C607	1-123-380-00	ELECT	1MF	20%	50V
C611	1-136-165-00	FILM	0.1MF	5%	50V
C612	1-136-165-00	(G-AEP, AEP, UK, AED) ... FILM	0.1MF	5%	50V
C623	1-161-330-00	(G-AEP) ...CERAMIC	0.01MF	30%	25V
C632	1-123-360-00	ELECT	100MF	20%	50V
C633	1-123-356-00	ELECT	10MF	20%	50V
C651	1-162-286-31	CERAMIC	220PF	10%	50V
C652	1-136-165-00	FILM	0.1MF	5%	50V
C653	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C654	1-123-357-00	ELECT	22MF	20%	50V
C655	1-123-359-00	ELECT	47MF	20%	50V

### ELECTRICAL PARTS

Ref.No.	Part No.	Description	
C656	1-162-290-31	CERAMIC	47
C657	1-123-380-00	ELECT	1M
C661	1-136-165-00	FILM	0.
C662	1-136-165-00	(G-AEP,AEP,UK,AED) ... FILM	22
C672	1-123-308-00	ELECT	22
C673	1-162-306-31	CERAMIC	0.
C674	1-123-308-00	ELECT	22
C675	1-136-157-00	FILM	0.
C677	1-123-307-00	ELECT	10
C682	1-161-330-00	(G-AEP) ...CERAMIC	22
C683	1-162-306-31	(G-AEP) ...CERAMIC	0.
C701	1-131-355-00	TANTALUM	2.
C702	1-131-371-00	TANTALUM	10
C711	1-131-344-00	TANTALUM	0.
C712	1-136-161-00	FILM	0.
C713	1-131-356-00	TANTALUM	3.
C721	1-131-342-00	TANTALUM	0.
C722	1-162-596-00	CERAMIC	0.
C723	1-131-356-00	TANTALUM	3.
C731	1-136-162-00	FILM	0.
C732	1-161-012-00	CERAMIC	0.
C733	1-131-356-00	TANTALUM	3.
C741	1-162-596-00	CERAMIC	0.
C742	1-162-303-31	CERAMIC	0.
C743	1-131-356-00	TANTALUM	3.
C751	1-162-306-31	CERAMIC	0.
C752	1-162-301-31	CERAMIC	0.
C753	1-131-356-00	TANTALUM	3.
C761	1-161-046-00	CERAMIC	0.
C762	1-162-291-31	CERAMIC	56
C763	1-131-356-00	TANTALUM	3.
C771	1-161-041-00	CERAMIC	0.
C772	1-162-286-31	CERAMIC	22
C773	1-131-356-00	TANTALUM	3.
C791	1-131-371-00	TANTALUM	10
C795	1-162-306-31	CERAMIC	0.
C796	1-131-355-00	TANTALUM	2.
C901 $\Delta$	1-124-362-00	ELECT	47
C902 $\Delta$	1-124-362-00	ELECT	47
C903	1-123-338-00	ELECT	22
C905	1-123-369-00	ELECT	4.
C910	1-123-356-00	ELECT	10
C915	1-123-356-00	ELECT	10
C920	1-123-307-00	ELECT	10
C930	1-136-171-00	FILM	0.
C931	1-102-394-00	CERAMIC	0.
C932 $\Delta$	1-161-744-00	CERAMIC	0.
C933	1-136-171-00	FILM	0.
C1101	1-123-612-00	ELECT	2.
C1102	1-136-165-00	FILM	0.
C1103	1-136-165-00	FILM	0.
C1104	1-162-282-31	CERAMIC	10
C1105	1-136-160-00	FILM	0.
C1106	1-136-157-00	FILM	0.
C1107	1-123-617-00	ELECT	10
C1108	1-123-612-00	ELECT	2.

## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C399	1-162-294-31	CERAMIC	0.001MF	10%	50V
C413	1-131-371-00	TANTALUM	10MF	10%	16V
C419	1-162-288-31	CERAMIC	330PF	10%	50V
C423	1-131-371-00	TANTALUM	10MF	10%	16V
C431	1-131-346-00	TANTALUM	0.68MF	10%	35V
C432	1-131-344-00	TANTALUM	0.33MF	10%	35V
C433	1-131-341-00	TANTALUM	0.1MF	10%	35V
C434	1-136-161-00	FILM	0.047MF	5%	50V
C435	1-162-306-31	CERAMIC	0.01MF	20%	16V
C436	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C437	1-162-303-31	CERAMIC	0.0033MF	20%	16V
C438	1-131-342-00	TANTALUM	0.15MF	10%	35V
C439	1-136-161-00	FILM	0.047MF	5%	50V
C440	1-162-596-00	CERAMIC	0.022MF	20%	16V
C441	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C442	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C443	1-162-294-31	CERAMIC	0.001MF	10%	50V
C444	1-162-291-31	CERAMIC	560PF	10%	50V
C451	1-131-371-00	TANTALUM	10MF	10%	16V
C452	1-131-371-00	TANTALUM	10MF	10%	16V
C461	1-162-306-31	CERAMIC	0.01MF	30%	16V
C469	1-162-288-31	CERAMIC	330PF	10%	50V
C471	1-131-346-00	TANTALUM	0.68MF	10%	35V
C472	1-131-344-00	TANTALUM	0.33MF	10%	35V
C473	1-131-341-00	TANTALUM	0.1MF	10%	35V
C474	1-136-161-00	FILM	0.047MF	5%	50V
C475	1-162-306-31	CERAMIC	0.01MF	20%	16V
C476	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C477	1-162-303-31	CERAMIC	0.0033MF	20%	16V
C478	1-131-342-00	TANTALUM	0.15MF	10%	35V
C479	1-136-161-00	FILM	0.047MF	5%	50V
C480	1-162-596-00	CERAMIC	0.022MF	20%	25V
C481	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C482	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C483	1-162-294-31	CERAMIC	0.001MF	10%	50V
C484	1-162-291-31	CERAMIC	560PF	10%	50V
C502	1-123-611-00	ELECT	1MF	20%	50V
C503	1-161-055-00	CERAMIC	0.022MF	20%	25V
C504	1-123-622-00	ELECT	22MF	20%	16V
C505	1-123-611-00	ELECT	1MF	20%	50V
C601	1-162-286-31	CERAMIC	220PF	10%	50V
C602	1-136-165-00	FILM	0.1MF	5%	50V
C603	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C604	1-123-357-00	ELECT	22MF	20%	50V
C605	1-123-359-00	ELECT	47MF	20%	50V
C606	1-162-290-31	CERAMIC	470PF	10%	50V
C607	1-123-380-00	ELECT	1MF	20%	50V
C611	1-136-165-00	FILM	0.1MF	5%	50V
C612	1-136-165-00	(G-AEP,AEP,UK,AED)... FILM 0.1MF	5%	50V	
C623	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30%	25V
C632	1-123-360-00	ELECT	100MF	20%	50V
C633	1-123-356-00	ELECT	10MF	20%	50V
C651	1-162-286-31	CERAMIC	220PF	10%	50V
C652	1-136-165-00	FILM	0.1MF	5%	50V
C653	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C654	1-123-357-00	ELECT	22MF	20%	50V
C655	1-123-359-00	ELECT	47MF	20%	50V

## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C656	1-162-290-31	CERAMIC	470PF	10%	50V
C657	1-123-380-00	ELECT	1MF	20%	50V
C661	1-136-165-00	FILM	0.1MF	5%	50V
C662	1-136-165-00	(G-AEP,AEP,UK,AED)... FILM 0.1MF	5%	50V	
C672	1-123-308-00	ELECT	220MF	20%	10V
C673	1-162-306-31	CERAMIC	0.01MF	30%	16V
C674	1-123-308-00	ELECT	220MF	20%	10V
C675	1-136-157-00	FILM	0.022MF	5%	50V
C677	1-123-307-00	ELECT	100MF	20%	10V
C682	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30%	25V
C683	1-162-306-31	(G-AEP)...CERAMIC	0.01MF	30%	16V
C701	1-131-355-00	TANTALUM	2.2MF	10%	25V
C702	1-131-371-00	TANTALUM	10MF	10%	16V
C711	1-131-344-00	TANTALUM	0.33MF	10%	35V
C712	1-136-161-00	FILM	0.047MF	5%	50V
C713	1-131-356-00	TANTALUM	3.3MF	10%	25V
C721	1-131-342-00	TANTALUM	0.15MF	10%	35V
C722	1-162-596-00	CERAMIC	0.022MF	20%	25V
C723	1-131-356-00	TANTALUM	3.3MF	10%	25V
C731	1-136-162-00	FILM	0.056MF	5%	50V
C732	1-161-012-00	CERAMIC	0.0082MF	10%	25V
C733	1-131-356-00	TANTALUM	3.3MF	10%	25V
C741	1-162-596-00	CERAMIC	0.022MF	20%	25V
C742	1-162-303-31	CERAMIC	0.0033MF	30%	16V
C743	1-131-356-00	TANTALUM	3.3MF	10%	25V
C751	1-162-306-31	CERAMIC	0.01MF	30%	16V
C752	1-162-301-31	CERAMIC	0.0015MF	30%	16V
C753	1-131-356-00	TANTALUM	3.3MF	10%	25V
C761	1-161-046-00	CERAMIC	0.0039MF	10%	25V
C762	1-162-291-31	CERAMIC	560PF	10%	50V
C763	1-131-356-00	TANTALUM	3.3MF	10%	25V
C771	1-161-041-00	CERAMIC	0.0015MF	10%	25V
C772	1-162-286-31	CERAMIC	220PF	10%	50V
C773	1-131-356-00	TANTALUM	3.3MF	10%	25V
C791	1-131-371-00	TANTALUM	10MF	10%	16V
C795	1-162-306-31	CERAMIC	0.01MF	30%	16V
C796	1-131-355-00	TANTALUM	2.2MF	10%	25V
C901	1-124-362-00	ELECT	4700MF	20%	42V
C902	1-124-362-00	ELECT	4700MF	20%	42V
C903	1-123-338-00	ELECT	2200MF	20%	25V
C905	1-123-369-00	ELECT	4.7MF	20%	50V
C910	1-123-356-00	ELECT	10MF	20%	25V
C915	1-123-356-00	ELECT	10MF	20%	25V
C920	1-123-307-00	ELECT	100MF	20%	10V
C930	1-136-171-00	FILM	0.33MF	5%	50V
C931	1-102-394-00	CERAMIC	0.01MF	250V	
C932	1-161-744-00	CERAMIC	0.01MF	400V	
C933	1-136-171-00	FILM	0.33MF	5%	50V
C1101	1-123-612-00	ELECT	2.2MF	20%	50V
C1102	1-136-165-00	FILM	0.1MF	5%	50V
C1103	1-136-165-00	FILM	0.1MF	5%	50V
C1104	1-162-282-31	CERAMIC	100PF	10%	50V
C1105	1-136-160-00	FILM	0.039MF	5%	50V
C1106	1-136-157-00	FILM	0.022MF	5%	50V
C1107	1-123-617-00	ELECT	10MF	20%	16V
C1108	1-123-612-00	ELECT	2.2MF	20%	50V

## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C1109	1-123-617-00	ELECT	10MF	20%	16V
C1111	1-123-611-00	ELECT	1MF	20%	50V
C1112	1-162-288-31	CERAMIC	330PF	10%	50V
C1125	1-162-199-11	CERAMIC	10PF	10%	50V
C1126	1-136-160-00	FILM	0.039MF	5%	50V
C1127	1-123-307-00	ELECT	100MF	20%	10V
C1128	1-123-611-00	ELECT	1MF	20%	50V
C1129	1-123-610-00	ELECT	0.47MF	20%	50V
C1131	1-136-168-00	FILM	0.18MF	5%	50V
C1151	1-123-612-00	ELECT	2.2MF	20%	50V
C1152	1-136-165-00	FILM	0.1MF	5%	50V
C1153	1-136-165-00	FILM	0.1MF	5%	50V
C1154	1-162-282-31	CERAMIC	100PF	10%	50V
C1155	1-136-160-00	FILM	0.039MF	5%	50V
C1156	1-136-157-00	FILM	0.022MF	5%	50V
C1157	1-123-617-00	ELECT	10MF	20%	16V
C1158	1-123-612-00	ELECT	2.2MF	20%	50V
C1159	1-123-617-00	ELECT	10MF	20%	16V
C1161	1-123-611-00	ELECT	1MF	20%	50V
C1162	1-162-288-31	CERAMIC	330PF	10%	50V
C1175	1-162-199-11	CERAMIC	10PF	10%	50V
C1176	1-136-160-00	FILM	0.039MF	5%	50V
C1177	1-123-307-00	ELECT	100MF	20%	10V
C1178	1-123-611-00	ELECT	1MF	20%	50V
C1179	1-123-610-00	ELECT	0.47MF	20%	50V
C1181	1-136-168-00	FILM	0.18MF	5%	50V
C1201	1-123-612-00	ELECT	2.2MF	20%	50V
C1202	1-123-612-00	ELECT	2.2MF	20%	50V
C1203	1-123-612-00	ELECT	2.2MF	20%	50V
C1204	1-123-612-00	ELECT	2.2MF	20%	50V
C1205	1-123-612-00	ELECT	2.2MF	20%	50V
C1206	1-123-612-00	ELECT	2.2MF	20%	50V
C1211	1-123-612-00	ELECT	2.2MF	20%	50V
C1213	1-123-612-00	ELECT	2.2MF	20%	50V
C1214	1-123-612-00	ELECT	2.2MF	20%	50V
C1215	1-123-617-00	ELECT	10MF	20%	16V
C1216	1-123-617-00	ELECT	10MF	20%	16V
C1218	1-123-612-00	ELECT	2.2MF	20%	50V
C1231	1-162-306-31	CERAMIC	0.01MF	30%	16V
C1232	1-123-617-00	ELECT	10MF	20%	16V
C1233	1-136-165-00	FILM	0.1MF	5%	50V
C1501	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30%	25V
C1502	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30%	25V
C1503	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30%	25V
CN201	*1-560-061-00	PIN, CONNECTOR 3P			
CN202	*1-560-064-00	PIN, CONNECTOR 6P			
CN203	*1-560-063-00	PIN, CONNECTOR 5P			
CN204	*1-560-066-00	PIN, CONNECTOR 10P			
CN205	*1-560-060-00	PIN, CONNECTOR 2P			
CN206	*1-560-065-00	PIN, CONNECTOR 8P			
CN208	*1-564-496-11	PIN, CONNECTOR 3P			
CN216	*1-560-062-00	PIN, CONNECTOR 4P			
CN217	*1-560-603-00	PIN, CONNECTOR 4P			
CN401	*1-564-501-11	PIN, CONNECTOR 8P			
CN402	*1-564-496-11	PIN, CONNECTOR 3P			
CN403	*1-564-112-21	PIN, CONNECTOR 3P			

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
CN601	*1-560-070-00	BASE POST 5P
CN603	*1-560-070-00	BASE POST 5P
CN903	*1-560-063-00	PIN, CONNECTOR 5P
CN1101	*1-564-506-11	PLUG, CONNECTOR 3P
CN1102	*1-564-507-11	PLUG, CONNECTOR 4P
CN1103	*1-564-338-00	PIN, CONNECTOR 4P
CN1104	*1-564-506-11	PLUG, CONNECTOR 3P
CN1105	*1-564-505-11	PLUG, CONNECTOR 2P
CN1106	*1-564-506-11	PLUG, CONNECTOR 3P
CN1107	*1-564-507-11	PLUG, CONNECTOR 4P
D011	8-719-110-32	DIODE PH302B
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D311	8-719-911-19	DIODE 1SS119
D312	8-719-911-19	DIODE 1SS119
D321	8-719-910-61	DIODE HZ6A1L
D401	1-807-013-11	DIODE AA3422K
D402	1-807-013-11	DIODE AA3422K
D411	1-807-013-11	DIODE AA3422K
D412	1-807-013-11	DIODE AA3422K
D413	1-807-013-11	DIODE AA3422K
D414	1-807-013-11	DIODE AA3422K
D415	1-807-013-11	DIODE AA3422K
D416	1-807-013-11	DIODE AA3422K
D417	1-807-013-11	DIODE AA3422K
D671	8-719-911-19	DIODE 1SS119
D701	8-719-301-38	DIODE SEL2210S-C
D702	8-719-301-38	DIODE SEL2210S-C
D703	8-719-301-38	DIODE SEL2210S-C
D704	8-719-301-38	DIODE SEL2210S-C
D705	8-719-301-38	DIODE SEL2210S-C
D706	8-719-907-80	DIODE AA5535S
D711	8-719-301-43	DIODE SEL2410E-C
D712	8-719-300-95	DIODE SEL2710K
D713	8-719-301-60	DIODE SEL2910A-C
D714	8-719-301-52	DIODE SEL2810A-C
D715	8-719-301-38	DIODE SEL2210S-C
D721	8-719-301-43	DIODE SEL2410E-C
D722	8-719-300-95	DIODE SEL2710K
D723	8-719-301-60	DIODE SEL2910A-C
D724	8-719-301-52	DIODE SEL2810A-C
D725	8-719-301-38	DIODE SEL2210S-C
D731	8-719-301-43	DIODE SEL2410E-C
D732	8-719-300-95	DIODE SEL2710K
D733	8-719-301-60	DIODE SEL2910A-C
D734	8-719-301-52	DIODE SEL2810A-C
D735	8-719-301-38	DIODE SEL2210S-C
D741	8-719-301-43	DIODE SEL2410E-C
D742	8-719-300-95	DIODE SEL2710K
D743	8-719-301-60	DIODE SEL2910A-C
D744	8-719-301-52	DIODE SEL2810A-C
D745	8-719-301-38	DIODE SEL2210S-C
D751	8-719-301-43	DIODE SEL2410E-C
D752	8-719-300-95	DIODE SEL2710K
D753	8-719-301-60	DIODE SEL2910A-C
D754	8-719-301-52	DIODE SEL2810A-C



## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
	C1109	1-123-617-00	ELECT	10MF	20% 16V
	C1111	1-123-611-00	ELECT	1MF	20% 50V
	C1112	1-162-288-31	CERAMIC	330PF	10% 50V
	C1125	1-162-199-11	CERAMIC	10PF	10% 50V
	C1126	1-136-160-00	FILM	0.039MF	5% 50V
	C1127	1-123-307-00	ELECT	100MF	20% 10V
	C1128	1-123-611-00	ELECT	1MF	20% 50V
	C1129	1-123-610-00	ELECT	0.47MF	20% 50V
	C1131	1-136-168-00	FILM	0.18MF	5% 50V
	C1151	1-123-612-00	ELECT	2.2MF	20% 50V
	C1152	1-136-165-00	FILM	0.1MF	5% 50V
	C1153	1-136-165-00	FILM	0.1MF	5% 50V
	C1154	1-162-282-31	CERAMIC	100PF	10% 50V
	C1155	1-136-160-00	FILM	0.039MF	5% 50V
	C1156	1-136-157-00	FILM	0.022MF	5% 50V
	C1157	1-123-617-00	ELECT	10MF	20% 16V
	C1158	1-123-612-00	ELECT	2.2MF	20% 50V
	C1159	1-123-617-00	ELECT	10MF	20% 16V
	C1161	1-123-611-00	ELECT	1MF	20% 50V
	C1162	1-162-288-31	CERAMIC	330PF	10% 50V
	C1175	1-162-199-11	CERAMIC	10PF	10% 50V
	C1176	1-136-160-00	FILM	0.039MF	5% 50V
	C1177	1-123-307-00	ELECT	100MF	20% 10V
	C1178	1-123-611-00	ELECT	1MF	20% 50V
	C1179	1-123-610-00	ELECT	0.47MF	20% 50V
	C1181	1-136-168-00	FILM	0.18MF	5% 50V
	C1201	1-123-612-00	ELECT	2.2MF	20% 50V
	C1202	1-123-612-00	ELECT	2.2MF	20% 50V
	C1203	1-123-612-00	ELECT	2.2MF	20% 50V
	C1204	1-123-612-00	ELECT	2.2MF	20% 50V
	C1205	1-123-612-00	ELECT	2.2MF	20% 50V
	C1206	1-123-612-00	ELECT	2.2MF	20% 50V
	C1211	1-123-612-00	ELECT	2.2MF	20% 50V
	C1213	1-123-612-00	ELECT	2.2MF	20% 50V
	C1214	1-123-612-00	ELECT	2.2MF	20% 50V
	C1215	1-123-617-00	ELECT	10MF	20% 16V
	C1216	1-123-617-00	ELECT	10MF	20% 16V
	C1218	1-123-612-00	ELECT	2.2MF	20% 50V
	C1231	1-162-306-31	CERAMIC	0.01MF	30% 16V
	C1232	1-123-617-00	ELECT	10MF	20% 16V
	C1233	1-136-165-00	FILM	0.1MF	5% 50V
	C1501	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30% 25V
	C1502	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30% 25V
	C1503	1-161-330-00	(G-AEP)...CERAMIC	0.01MF	30% 25V
	CN201	*1-560-061-00	PIN, CONNECTOR 3P		
	CN202	*1-560-064-00	PIN, CONNECTOR 6P		
	CN203	*1-560-063-00	PIN, CONNECTOR 5P		
	CN204	*1-560-066-00	PIN, CONNECTOR 10P		
	CN205	*1-560-060-00	PIN, CONNECTOR 2P		
	CN206	*1-560-065-00	PIN, CONNECTOR 8P		
	CN208	*1-564-496-11	PIN, CONNECTOR 3P		
	CN216	*1-560-062-00	PIN, CONNECTOR 4P		
	CN217	*1-560-603-00	PIN, CONNECTOR 4P		
	CN401	*1-564-501-11	PIN, CONNECTOR 8P		
	CN402	*1-564-496-11	PIN, CONNECTOR 3P		
	CN403	*1-564-112-21	PIN, CONNECTOR 3P		

## ELECTRICAL PARTS


Ref.No.	Part No.	Description
CN601	*1-560-070-00	BASE POST 5P
CN603	*1-560-070-00	BASE POST 5P
CN903	*1-560-063-00	PIN, CONNECTOR 5P
CN1101	*1-564-506-11	PLUG, CONNECTOR 3P
CN1102	*1-564-507-11	PLUG, CONNECTOR 4P
CN1103	*1-564-338-00	PIN, CONNECTOR 4P
CN1104	*1-564-506-11	PLUG, CONNECTOR 3P
CN1105	*1-564-505-11	PLUG, CONNECTOR 2P
CN1106	*1-564-506-11	PLUG, CONNECTOR 3P
CN1107	*1-564-507-11	PLUG, CONNECTOR 4P
D011	8-719-110-32	DIODE PH302B
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D311	8-719-911-19	DIODE 1SS119
D312	8-719-911-19	DIODE 1SS119
D321	8-719-910-61	DIODE HZ6A1L
D401	1-807-013-11	DIODE AA3422K
D402	1-807-013-11	DIODE AA3422K
D411	1-807-013-11	DIODE AA3422K
D412	1-807-013-11	DIODE AA3422K
D413	1-807-013-11	DIODE AA3422K
D414	1-807-013-11	DIODE AA3422K
D415	1-807-013-11	DIODE AA3422K
D416	1-807-013-11	DIODE AA3422K
D417	1-807-013-11	DIODE AA3422K
D671	8-719-911-19	DIODE 1SS119
D701	8-719-301-38	DIODE SEL2210S-C
D702	8-719-301-38	DIODE SEL2210S-C
D703	8-719-301-38	DIODE SEL2210S-C
D704	8-719-301-38	DIODE SEL2210S-C
D705	8-719-301-38	DIODE SEL2210S-C
D706	8-719-907-80	DIODE AA5535S
D711	8-719-301-43	DIODE SEL2410E-C
D712	8-719-300-95	DIODE SEL2710K
D713	8-719-301-60	DIODE SEL2910A-C
D714	8-719-301-52	DIODE SEL2810A-C
D715	8-719-301-38	DIODE SEL2210S-C
D721	8-719-301-43	DIODE SEL2410E-C
D722	8-719-300-95	DIODE SEL2710K
D723	8-719-301-60	DIODE SEL2910A-C
D724	8-719-301-52	DIODE SEL2810A-C
D725	8-719-301-38	DIODE SEL2210S-C
D731	8-719-301-43	DIODE SEL2410E-C
D732	8-719-300-95	DIODE SEL2710K
D733	8-719-301-60	DIODE SEL2910A-C
D734	8-719-301-52	DIODE SEL2810A-C
D735	8-719-301-38	DIODE SEL2210S-C
D741	8-719-301-43	DIODE SEL2410E-C
D742	8-719-300-95	DIODE SEL2710K
D743	8-719-301-60	DIODE SEL2910A-C
D744	8-719-301-52	DIODE SEL2810A-C
D745	8-719-301-38	DIODE SEL2210S-C
D751	8-719-301-43	DIODE SEL2410E-C
D752	8-719-300-95	DIODE SEL2710K
D753	8-719-301-60	DIODE SEL2910A-C
D754	8-719-301-52	DIODE SEL2810A-C

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
D755	8-719-301-38	DIODE SEL2210S-C
D761	8-719-301-43	DIODE SEL2410E-C
D762	8-719-300-95	DIODE SEL2710K
D763	8-719-301-60	DIODE SEL2910A-C
D764	8-719-301-52	DIODE SEL2810A-C
D765	8-719-301-38	DIODE SEL2210S-C
D771	8-719-301-43	DIODE SEL2410E-C
D772	8-719-300-95	DIODE SEL2710K
D773	8-719-301-60	DIODE SEL2910A-C
D774	8-719-301-52	DIODE SEL2810A-C
D775	8-719-301-38	DIODE SEL2210S-C
D781	8-719-301-52	DIODE SEL2810A-C
D782	8-719-301-52	DIODE SEL2810A-C
D783	8-719-301-52	DIODE SEL2810A-C
D784	8-719-301-52	DIODE SEL2810A-C
D791	8-719-901-62	DIODE HZ16-2L
D901	8-719-300-67	DIODE RB602F
D902	8-719-300-57	DIODE RB402
D904	8-719-911-19	DIODE 1SS119
D910	8-719-904-21	DIODE HZ12A1
D915	8-719-904-21	DIODE HZ12A1
D920	8-719-910-71	DIODE HZ7A1L
D1101	8-719-911-19	DIODE 1SS119
D1102	8-719-911-19	DIODE 1SS119
D1125	8-719-910-61	DIODE HZ6A1L
D1151	8-719-911-19	DIODE 1SS119
D1152	8-719-911-19	DIODE 1SS119
D1175	8-719-910-61	DIODE HZ6A1L
D1231	8-719-911-19	DIODE 1SS119
D1232	8-719-911-19	DIODE 1SS119
D1301	8-719-403-98	DIODE LN450YP
F901	1-532-285-00	FUSE, TIME-LAG, 1.25A
F902	1-532-285-00	(EA3,E)....FUSE, TIME-LAG, 1.25A
IC011	8-759-602-54	IC CX20106A
IC101	8-759-600-02	IC M5218L
IC201	8-759-600-02	IC M5218L
IC202	8-759-801-63	IC LC7816
IC203	8-759-204-30	IC TC9176P
IC301	8-759-602-60	IC M50765-440SP
IC401	8-759-602-04	IC M5226P
IC402	8-759-602-04	IC M5226P
IC403	8-759-602-04	IC M5226P
IC601	8-759-941-52	IC STK4152II
IC671	8-759-101-23	IC UPC1237H
IC711	8-759-913-80	IC IR2E31
IC721	8-759-913-80	IC IR2E31
IC731	8-759-913-80	IC IR2E31
IC741	8-759-913-80	IC IR2E31
IC751	8-759-913-80	IC IR2E31
IC761	8-759-913-80	IC IR2E31
IC771	8-759-913-80	IC IR2E31
IC1201	8-759-600-02	IC M5218L
IC1202	8-759-801-01	IC LC4966
IC1203	8-759-600-02	IC M5218L
IC1204	8-759-801-01	IC LC4966
J501	1-507-984-11	JACK (LARGE TYPE)(MIC)
J801	1-507-981-11	JACK (LARGE TYPE)(HEADPHONES)

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
OS301	1-527-532-00	OSCILLATOR, CERAMIC
PIN101	1-507-914-21	JACK, PIN 6P
Q201	8-729-600-08	TRANSISTOR 2SK381-E
Q251	8-729-600-08	TRANSISTOR 2SK381-E
Q301	8-729-606-33	TRANSISTOR 2SC2603F
Q302	8-729-117-54	TRANSISTOR 2SA1175
Q305	8-729-606-33	TRANSISTOR 2SC2603F
Q310	8-729-117-54	TRANSISTOR 2SA1175
Q311	8-729-117-54	TRANSISTOR 2SA1175
Q312	8-729-117-54	TRANSISTOR 2SA1175
Q320	8-729-117-54	TRANSISTOR 2SA1175
Q321	8-729-117-54	TRANSISTOR 2SA1175
Q322	8-729-117-54	TRANSISTOR 2SA1175
Q323	8-729-117-54	TRANSISTOR 2SA1175
Q324	8-729-117-54	TRANSISTOR 2SA1175
Q325	8-729-117-54	TRANSISTOR 2SA1175
Q326	8-729-606-33	TRANSISTOR 2SC2603F
Q501	8-729-606-33	TRANSISTOR 2SC2603F
Q601	8-729-108-05	TRANSISTOR 2SC1841PA
Q651	8-729-108-05	TRANSISTOR 2SC1841PA
Q671	8-729-117-54	TRANSISTOR 2SA1175
Q701	8-729-606-33	TRANSISTOR 2SC2603F
Q702	8-729-180-93	TRANSISTOR 2SD809
Q910	8-729-111-85	TRANSISTOR 2SD1288-Q
Q911	8-729-606-33	TRANSISTOR 2SC2603F
Q915	8-729-111-91	TRANSISTOR 2SB965-Q
Q916	8-729-117-54	TRANSISTOR 2SA1175
Q920	8-729-180-93	TRANSISTOR 2SD809
Q1101	8-729-600-27	TRANSISTOR 2SC634SP
Q1102	8-729-600-27	TRANSISTOR 2SC634SP
Q1125	8-729-117-54	TRANSISTOR 2SA1175
Q1151	8-729-600-27	TRANSISTOR 2SC634SP
Q1152	8-729-600-27	TRANSISTOR 2SC634SP
Q1175	8-729-117-54	TRANSISTOR 2SA1175
Q1231	8-729-900-85	TRANSISTOR DTC144WS
Q1232	8-729-900-69	TRANSISTOR DTA144WS
Q1233	8-729-900-85	TRANSISTOR DTC144WS
Q1234	8-729-900-69	TRANSISTOR DTA144WS
Q1235	8-729-900-69	TRANSISTOR DTA144WS
Q1236	8-729-900-85	TRANSISTOR DTC144WS
Q1237	8-729-900-69	TRANSISTOR DTA144WS
Q1238	8-729-900-85	TRANSISTOR DTC144WS
Q1239	8-729-900-69	TRANSISTOR DTA144WS
R011	1-247-775-00	CARBON 4.7 5% 1/6W
R012	1-249-433-11	CARBON 22K 5% 1/6W
R013	1-215-476-00	METAL 200K 1% 1/6W
R101	1-247-891-00	CARBON 330K 5% 1/6W
R102	1-247-831-00	CARBON 1K 5% 1/6W
R103	1-247-873-00	CARBON 56K 5% 1/6W
R104	1-247-831-00	CARBON 1K 5% 1/6W
R105	1-249-437-11	CARBON 47K 5% 1/6W
R106	1-247-901-00	CARBON 820K 5% 1/6W
R111	1-247-831-00	CARBON 1K 5% 1/6W
R115	1-247-891-00	CARBON 330K 5% 1/6W
R116	1-247-843-00	CARBON 3.3K 5% 1/6W

The components identified by shading and mark  are critical for safety. Replace only with part number specified.




### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R117	1-247-831-00	CARBON	1K	5%	1/6W
R151	1-247-891-00	CARBON	330K	5%	1/6W
R152	1-247-831-00	CARBON	1K	5%	1/6W
R153	1-247-873-00	CARBON	56K	5%	1/6W
R154	1-247-831-00	CARBON	1K	5%	1/6W
R155	1-249-437-11	CARBON	47K	5%	1/6W
R156	1-247-901-00	CARBON	820K	5%	1/6W
R161	1-247-831-00	CARBON	1K	5%	1/6W
R165	1-247-891-00	CARBON	330K	5%	1/6W
R166	1-247-843-00	CARBON	3.3K	5%	1/6W
R167	1-247-831-00	CARBON	1K	5%	1/6W
R202	1-247-831-00	CARBON	1K	5%	1/6W
R203	1-247-831-00	CARBON	1K	5%	1/6W
R204	1-247-853-00	CARBON	8.2K	5%	1/6W
R205	1-247-831-00	CARBON	1K	5%	1/6W
R206	1-247-849-00	CARBON	5.6K	5%	1/6W
R207	1-247-891-00	CARBON	330K	5%	1/6W
R208	1-247-891-00	CARBON	330K	5%	1/6W
R209	1-247-891-00	CARBON	330K	5%	1/6W
R210	1-249-434-11	CARBON	27K	5%	1/6W
R211	1-247-849-00	CARBON	5.6K	5%	1/6W
R212	1-247-873-00	CARBON	56K	5%	1/6W
R214	1-249-425-11	CARBON	4.7K	5%	1/6W
R215	1-249-425-11	CARBON	4.7K	5%	1/6W
R218	1-249-441-11	CARBON	100K	5%	1/6W
R231	1-247-903-00	CARBON	1M	5%	1/6W
R252	1-247-831-00	CARBON	1K	5%	1/6W
R253	1-247-831-00	CARBON	1K	5%	1/6W
R254	1-247-853-00	CARBON	8.2K	5%	1/6W
R255	1-247-831-00	CARBON	1K	5%	1/6W
R256	1-247-849-00	CARBON	5.6K	5%	1/6W
R257	1-247-891-00	CARBON	330K	5%	1/6W
R258	1-247-891-00	CARBON	330K	5%	1/6W
R259	1-247-891-00	CARBON	330K	5%	1/6W
R260	1-249-434-11	CARBON	27K	5%	1/6W
R261	1-247-849-00	CARBON	5.6K	5%	1/6W
R262	1-247-873-00	CARBON	56K	5%	1/6W
R264	1-249-425-11	CARBON	4.7K	5%	1/6W
R265	1-249-425-11	CARBON	4.7K	5%	1/6W
R268	1-249-441-11	CARBON	100K	5%	1/6W
R281	1-247-903-00	CARBON	1M	5%	1/6W
R305	1-247-843-00	CARBON	3.3K	5%	1/6W
R306	1-249-433-11	CARBON	22K	5%	1/6W
R307	1-247-831-00	CARBON	1K	5%	1/6W
R312	1-249-425-11	CARBON	4.7K	5%	1/6W
R313	1-249-429-11	CARBON	10K	5%	1/6W
R315	1-249-429-11	CARBON	10K	5%	1/6W
R316	1-249-429-11	CARBON	10K	5%	1/6W
R321	1-249-429-11	CARBON	10K	5%	1/6W
R322	1-249-429-11	CARBON	10K	5%	1/6W
R323	1-249-429-11	CARBON	10K	5%	1/6W
R331	1-249-441-11	CARBON	100K	5%	1/6W
R332	1-247-903-00	CARBON	1M	5%	1/6W
R333	1-247-843-00	CARBON	3.3K	5%	1/6W
R335	1-249-441-11	CARBON	100K	5%	1/6W
R336	1-247-831-00	CARBON	1K	5%	1/6W
R340	1-247-843-00	CARBON	3.3K	5%	1/6W

### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R341	1-247-843-00	CARBON	3.3K	5%	1/6W
R342	1-247-843-00	CARBON	3.3K	5%	1/6W
R343	1-247-843-00	CARBON	3.3K	5%	1/6W
R345	1-249-429-11	CARBON	10K	5%	1/6W
R346	1-249-429-11	CARBON	10K	5%	1/6W
R347	1-249-429-11	CARBON	10K	5%	1/6W
R348	1-249-429-11	CARBON	10K	5%	1/6W
R350	1-249-441-11	CARBON	100K	5%	1/6W
R351	1-249-429-11	CARBON	10K	5%	1/6W
R352	1-249-429-11	CARBON	10K	5%	1/6W
R353	1-249-429-11	CARBON	10K	5%	1/6W
R354	1-249-429-11	CARBON	10K	5%	1/6W
R355	1-249-429-11	CARBON	10K	5%	1/6W
R356	1-249-441-11	CARBON	100K	5%	1/6W
R357	1-247-891-00	CARBON	330K	5%	1/6W
R358	1-249-441-11	CARBON	100K	5%	1/6W
R361	1-249-429-11	CARBON	10K	5%	1/6W
R362	1-249-429-11	CARBON	10K	5%	1/6W
R363	1-249-429-11	CARBON	10K	5%	1/6W
R371	1-249-429-11	CARBON	10K	5%	1/6W
R372	1-249-429-11	CARBON	10K	5%	1/6W
R373	1-249-429-11	CARBON	10K	5%	1/6W
R380	1-249-429-11	CARBON	10K	5%	1/6W
R381	1-249-425-11	CARBON	4.7K	5%	1/6W
R382	1-247-873-00	CARBON	56K	5%	1/6W
R385	1-249-429-11	CARBON	10K	5%	1/6W
R386	1-249-425-11	CARBON	4.7K	5%	1/6W
R391	1-249-414-11	CARBON	560	5%	1/6W
R392	1-249-414-11	CARBON	560	5%	1/6W
R394	1-247-831-00	CARBON	1K	5%	1/6W
R395	1-249-429-11	CARBON	10K	5%	1/6W
R396	1-249-429-11	CARBON	10K	5%	1/6W
R397	1-249-429-11	CARBON	10K	5%	1/6W
R398	1-249-429-11	CARBON	10K	5%	1/6W
R399	1-249-429-11	CARBON	10K	5%	1/6W
R411	1-249-425-11	CARBON	4.7K	5%	1/6W
R412	1-249-437-11	CARBON	47K	5%	1/6W
R413	1-249-425-11	CARBON	4.7K	5%	1/6W
R421	1-249-425-11	CARBON	4.7K	5%	1/6W
R422	1-249-437-11	CARBON	47K	5%	1/6W
R423	1-249-425-11	CARBON	4.7K	5%	1/6W
R461	1-249-429-11	CARBON	10K	5%	1/6W
R491	1-247-823-00	CARBON	470	5%	1/6W
R501	1-249-429-11	CARBON	10K	5%	1/6W
R502	1-249-414-11	CARBON	560	5%	1/6W
R503	1-249-432-11	CARBON	18K	5%	1/6W
R504	1-249-440-11	CARBON	82K	5%	1/6W
R505	1-249-425-11	CARBON	4.7K	5%	1/6W
R506	1-247-831-00	CARBON	1K	5%	1/6W
R601	1-247-873-00	CARBON	56K	5%	1/6W
R602	1-249-421-11	CARBON	2.2K	5%	1/6W
R603	1-249-421-11	CARBON	2.2K	5%	1/6W
R604	1-247-873-00	CARBON	56K	5%	1/6W
R605	1-247-717-11	CARBON	2.2K	5%	1/4W
R606	1-247-717-11	CARBON	2.2K	5%	1/4W
R607	1-217-151-00	METAL PLATE	0.22	10%	2W
R608	1-249-414-11	CARBON	560	5%	1/6W

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R609	1-249-414-11	CARBON	560	5%	1/6W
R611	△.1-247-192-00	CARBON	10	5%	1/2W F
R631	△.1-217-399-00	FUSIBLE	100	5%	1/4W F
R632	△.1-247-240-00	CARBON	1K	5%	1/2W F
R633	△.1-247-240-00	CARBON	1K	5%	1/2W F
R634	△.1-212-883-00	FUSIBLE	120	5%	1/4W F
R635	△.1-217-399-00	FUSIBLE	100	5%	1/4W F
R641	1-247-849-00	CARBON	5.6K	5%	1/6W
R651	1-247-873-00	CARBON	56K	5%	1/6W
R652	1-249-421-11	CARBON	2.2K	5%	1/6W
R653	1-249-421-11	CARBON	2.2K	5%	1/6W
R654	1-247-873-00	CARBON	56K	5%	1/6W
R655	△.1-247-717-11	CARBON	2.2K	5%	1/4W
R656	△.1-247-717-11	CARBON	2.2K	5%	1/4W
R657	△.1-217-151-00	METAL PLATE	0.22	10%	2W
R658	1-249-414-11	CARBON	560	5%	1/6W
R659	1-249-414-11	CARBON	560	5%	1/6W
R661	△.1-247-192-00	CARBON	10	5%	1/2W F
R671	1-249-433-11	CARBON	22K	5%	1/6W
R672	1-249-429-11	CARBON	10K	5%	1/6W
R673	1-249-433-11	CARBON	22K	5%	1/6W
R674	1-249-433-11	CARBON	22K	5%	1/6W
R675	1-247-881-00	CARBON	120K	5%	1/6W
R676	1-247-881-00	CARBON	120K	5%	1/6W
R677	1-249-441-11	CARBON	100K	5%	1/6W
R678	△.1-247-220-00	CARBON	150	5%	1/2W F
R679	1-249-429-11	CARBON	10K	5%	1/6W
R680	1-247-873-00	CARBON	56K	5%	1/6W
R691	1-247-849-00	CARBON	5.6K	5%	1/6W
R701	1-249-414-11	CARBON	560	5%	1/6W
R702	1-249-425-11	CARBON	4.7K	5%	1/6W
R703	1-249-435-11	CARBON	33K	5%	1/6W
R704	1-247-833-00	CARBON	1.2K	5%	1/6W
R705	1-249-419-11	CARBON	1.5K	5%	1/6W
R711	1-249-425-11	CARBON	4.7K	5%	1/6W
R712	1-247-875-00	CARBON	68K	5%	1/6W
R716	1-247-813-00	CARBON	180	5%	1/6W
R721	1-249-425-11	CARBON	4.7K	5%	1/6W
R722	1-247-875-00	CARBON	68K	5%	1/6W
R726	1-247-813-00	CARBON	180	5%	1/6W
R731	1-249-425-11	CARBON	4.7K	5%	1/6W
R732	1-247-875-00	CARBON	68K	5%	1/6W
R736	1-247-813-00	CARBON	180	5%	1/6W
R741	1-249-425-11	CARBON	4.7K	5%	1/6W
R742	1-247-875-00	CARBON	68K	5%	1/6W
R746	1-247-813-00	CARBON	180	5%	1/6W
R751	1-249-425-11	CARBON	4.7K	5%	1/6W
R752	1-247-875-00	CARBON	68K	5%	1/6W
R756	1-247-813-00	CARBON	180	5%	1/6W
R761	1-249-425-11	CARBON	4.7K	5%	1/6W
R762	1-247-875-00	CARBON	68K	5%	1/6W
R766	1-247-813-00	CARBON	180	5%	1/6W
R771	1-249-425-11	CARBON	4.7K	5%	1/6W
R772	1-247-875-00	CARBON	68K	5%	1/6W
R776	1-247-813-00	CARBON	180	5%	1/6W
R781	1-247-819-00	CARBON	330	5%	1/6W
R782	1-247-819-00	CARBON	330	5%	1/6W

## ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R783	1-247-819-00	CARBON	330	5%	1/6W
R784	1-247-819-00	CARBON	330	5%	1/6W
R785	1-247-819-00	CARBON	330	5%	1/6W
R786	1-247-819-00	CARBON	330	5%	1/6W
R787	1-247-831-00	CARBON	1K	5%	1/6W
R791	1-247-719-11	CARBON	3.3K	5%	1/4W
R792	1-247-719-11	CARBON	3.3K	5%	1/4W
R793	1-249-414-11	CARBON	560	5%	1/6W
R796	1-247-831-00	CARBON	1K	5%	1/6W
R797	1-249-429-11	CARBON	10K	5%	1/6W
R798	1-249-429-11	CARBON	10K	5%	1/6W
R799	1-249-429-11	CARBON	10K	5%	1/6W
R801	△.1-247-711-11	CARBON	680	5%	1/4W F
R802	△.1-247-711-11	CARBON	680	5%	1/4W F
R903	△.1-217-422-00	FUSIBLE	1	5%	1/2W F
R904	1-247-849-00	CARBON	5.6K	5%	1/6W
R905	△.1-217-422-00	FUSIBLE	1	5%	1/2W F
R906	△.1-217-482-00	FUSIBLE	12	5%	1W F
R910	△.1-207-934-00	WIREWOUND	120	10%	5W F
R911	1-249-425-11	CARBON	4.7K	5%	1/6W
R912	1-249-429-11	CARBON	10K	5%	1/6W
R915	△.1-207-686-00	WIREWOUND	100	10%	5W F
R916	1-249-425-11	CARBON	4.7K	5%	1/6W
R917	1-249-429-11	CARBON	10K	5%	1/6W
R920	△.1-213-131-00	METAL OXIDE	100	5%	1W F
R921	1-249-421-11	CARBON	2.2K	5%	1/6W
R1101	1-247-895-00	CARBON	470K	5%	1/6W
R1102	1-247-887-00	CARBON	220K	5%	1/6W
R1103	1-249-425-11	CARBON	4.7K	5%	1/6W
R1104	1-247-815-00	CARBON	220	5%	1/6W
R1105	1-249-440-11	CARBON	82K	5%	1/6W
R1106	1-247-857-00	CARBON	12K	5%	1/6W
R1107	1-247-851-00	CARBON	6.8K	5%	1/6W
R1108	1-247-831-00	CARBON	1K	5%	1/6W
R1109	1-247-869-00	CARBON	39K	5%	1/6W
R1110	1-247-845-00	CARBON	3.9K	5%	1/6W
R1111	1-247-875-00	CARBON	68K	5%	1/6W
R1112	1-247-833-00	CARBON	1.2K	5%	1/6W
R1113	1-247-895-00	CARBON	470K	5%	1/6W
R1114	1-247-903-00	CARBON	1M	5%	1/6W
R1115	1-247-841-00	CARBON	2.7K	5%	1/6W
R1116	1-249-433-11	CARBON	22K	5%	1/6W
R1117	1-247-815-00	CARBON	220	5%	1/6W
R1118	1-247-851-00	CARBON	6.8K	5%	1/6W
R1119	1-249-421-11	CARBON	2.2K	5%	1/6W
R1121	1-247-831-00	CARBON	1K	5%	1/6W
R1125	1-247-819-00	CARBON	330	5%	1/6W
R1126	1-247-831-00	CARBON	1K	5%	1/6W
R1127	1-249-429-11	CARBON	10K	5%	1/6W
R1128	1-249-405-11	CARBON	100	5%	1/6W
R1129	1-249-435-11	CARBON	33K	5%	1/6W
R1131	1-249-435-11	CARBON	33K	5%	1/6W
R1132	1-247-813-00	CARBON	180	5%	1/6W
R1133	1-247-706-11	CARBON	330	5%	1/4W
R1134	1-249-433-11	CARBON	22K	5%	1/6W
R1135	1-247-815-00	CARBON	220	5%	1/6W
R1136	1-247-809-00	CARBON	120	5%	1/6W

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
R1137	1-247-903-00	CARBON	1M	5%	1/6W
R1138	1-247-831-00	CARBON	1K	5%	1/6W
R1148	1-249-441-11	CARBON	100K	5%	1/6W
R1149	1-249-405-11	CARBON	100	5%	1/6W
R1151	1-247-895-00	CARBON	470K	5%	1/6W
R1152	1-247-887-00	CARBON	220K	5%	1/6W
R1153	1-249-425-11	CARBON	4.7K	5%	1/6W
R1154	1-247-815-00	CARBON	220	5%	1/6W
R1155	1-249-440-11	CARBON	82K	5%	1/6W
R1156	1-247-857-00	CARBON	12K	5%	1/6W
R1157	1-247-851-00	CARBON	6.8K	5%	1/6W
R1158	1-247-831-00	CARBON	1K	5%	1/6W
R1159	1-247-869-00	CARBON	39K	5%	1/6W
R1160	1-247-845-00	CARBON	3.9K	5%	1/6W
R1161	1-247-875-00	CARBON	68K	5%	1/6W
R1162	1-247-833-00	CARBON	1.2K	5%	1/6W
R1163	1-247-895-00	CARBON	470K	5%	1/6W
R1164	1-247-903-00	CARBON	1M	5%	1/6W
R1165	1-247-841-00	CARBON	2.7K	5%	1/6W
R1166	1-249-433-11	CARBON	22K	5%	1/6W
R1167	1-247-815-00	CARBON	220	5%	1/6W
R1168	1-247-851-00	CARBON	6.8K	5%	1/6W
R1169	1-249-421-11	CARBON	2.2K	5%	1/6W
R1171	1-247-831-00	CARBON	1K	5%	1/6W
R1175	1-247-819-00	CARBON	330	5%	1/6W
R1176	1-247-831-00	CARBON	1K	5%	1/6W
R1177	1-249-429-11	CARBON	10K	5%	1/6W
R1178	1-249-405-11	CARBON	100	5%	1/6W
R1179	1-249-435-11	CARBON	33K	5%	1/6W
R1181	1-249-435-11	CARBON	33K	5%	1/6W
R1182	1-247-813-00	CARBON	180	5%	1/6W
R1183	1-247-706-11	CARBON	330	5%	1/4W
R1184	1-249-433-11	CARBON	22K	5%	1/6W
R1185	1-247-815-00	CARBON	220	5%	1/6W
R1186	1-247-809-00	CARBON	120	5%	1/6W
R1187	1-247-903-00	CARBON	1M	5%	1/6W
R1188	1-247-831-00	CARBON	1K	5%	1/6W
R1199	1-249-405-11	CARBON	100	5%	1/6W
R1231	1-247-833-00	CARBON	1.2K	5%	1/6W
R1232	1-247-815-00	CARBON	220	5%	1/6W
R1233	1-247-815-00	CARBON	220	5%	1/6W
R1235	1-249-433-11	CARBON	22K	5%	1/6W

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
R1236	1-249-433-11	CARBON	22K	5%	1/6W
R1237	1-249-433-11	CARBON	22K	5%	1/6W
R1238	1-249-429-11	CARBON	10K	5%	1/6W
R1239	1-249-433-11	CARBON	22K	5%	1/6W
R1241	1-247-831-00	CARBON	1K	5%	1/6W
R1245	1-247-831-00	CARBON	1K	5%	1/6W
R1246	1-247-831-00	CARBON	1K	5%	1/6W
R1247	1-247-831-00	CARBON	1K	5%	1/6W
R1501	1-247-688-11	(G-AEP)...CARBON	10	5%	1/4W
R1502	1-247-688-11	(G-AEP)...CARBON	10	5%	1/4W
RV401	1-230-813-31	RES, VAR, SLIDE 250K/250K (BALANCE), including D401			
RV402	1-237-243-31	RES, VAR, SLIDE 50K/50K (MIC LEVEL), including D402			
RV411	1-230-813-31	RES, VAR, SLIDE 250K/250K (63Hz), including D411			
RV412	1-230-813-31	RES, VAR, SLIDE 250K/250K (150Hz), including D412			
RV413	1-230-813-31	RES, VAR, SLIDE 250K/250K (400Hz), including D413			
RV414	1-230-813-31	RES, VAR, SLIDE 250K/250K (1kHz), including D414			
RV415	1-230-813-31	RES, VAR, SLIDE 250K/250K (3kHz), including D415			
RV416	1-230-813-31	RES, VAR, SLIDE 250K/250K (6kHz), including D416			
RV417	1-230-813-31	RES, VAR, SLIDE 250K/250K (14kHz), including D417			
RY601	1-515-503-00	RELAY			
SW701	1-554-303-21	SWITCH, KEY BOARD (VOLUME UP)			
SW702	1-554-303-21	SWITCH, KEY BOARD (VOLUME DOWN)			
SW703	1-554-303-21	SWITCH, KEY BOARD (MUTING-20dB)			
SW704	1-554-303-21	SWITCH, KEY BOARD (PHONO)			
SW705	1-554-303-21	SWITCH, KEY BOARD (TVNER)			
SW706	1-554-303-21	SWITCH, KEY BOARD (CD/AUX)			
SW707	1-554-303-21	SWITCH, KEY BOARD (TAPE)			
ΔSW1001	1-553-318-51	SWITCH, PUSH (AC POWER)(1 KEY), POWER			
ΔSW1002	1-526-576-51	(EA3,E)...SELECTOR, POWER VOLTAGE			
SW1201	1-554-419-00	SWITCH, PUSH (1 KEY)(AMFB)			
T1001A	1-448-133-11	(EA3,E)...TRANSFORMER, POWER			
T1001A	1-448-134-11	(G-AEP,AEP,UK,AED)...TRANSFORMER, POWER			

The components identified  
by shading and mark Δ are  
critical for safety.  
Replace only with part  
number specified.

# STEREO CASSETTE DECK (TC-177R)

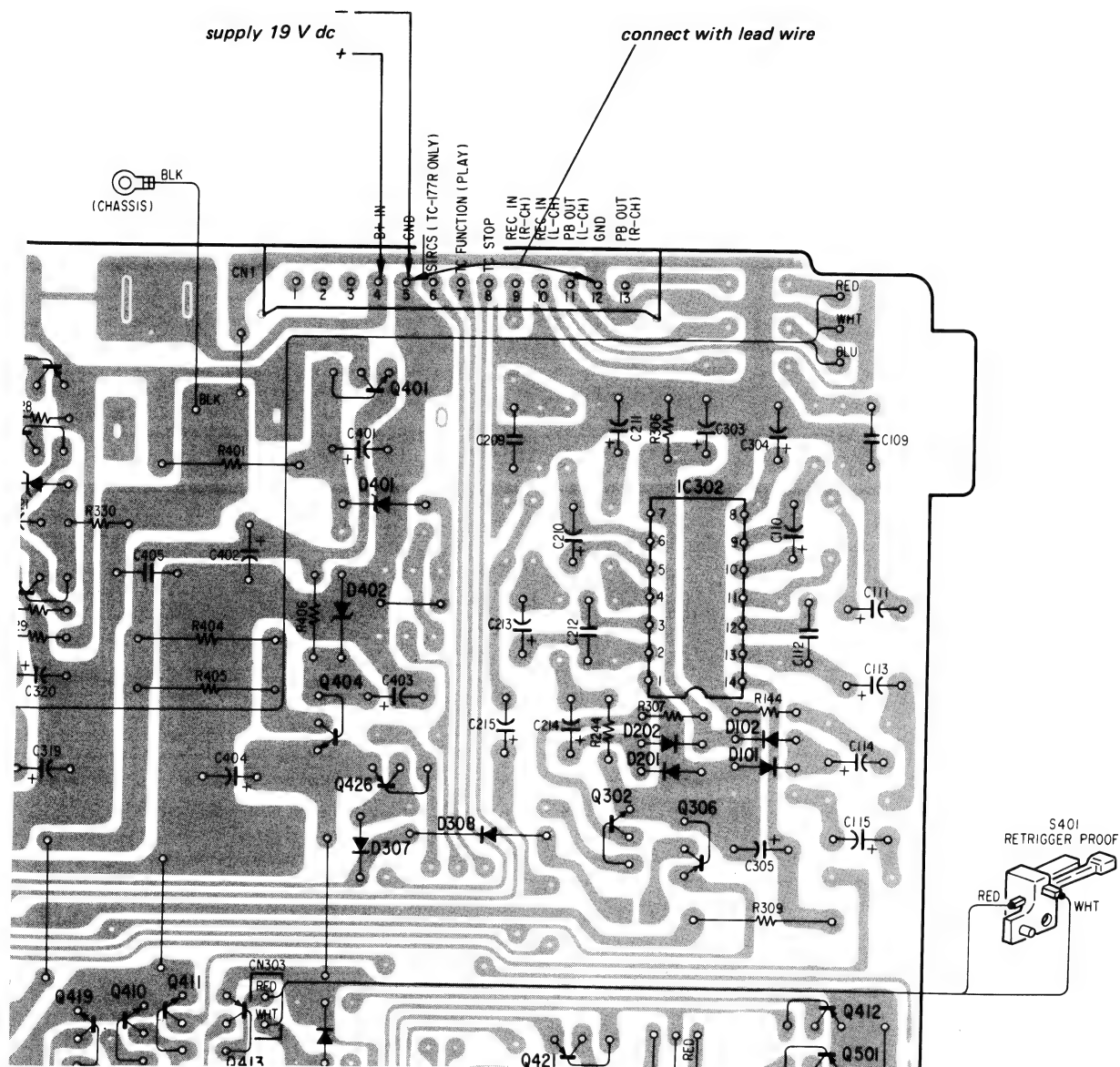
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Tape Transport Mechanism Type	TCM-150R10
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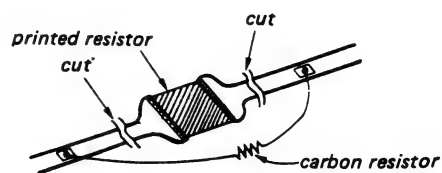
### SERVICING NOTE

- Voltage measurement should be made under the following condition.



### • Repairing printed resistor

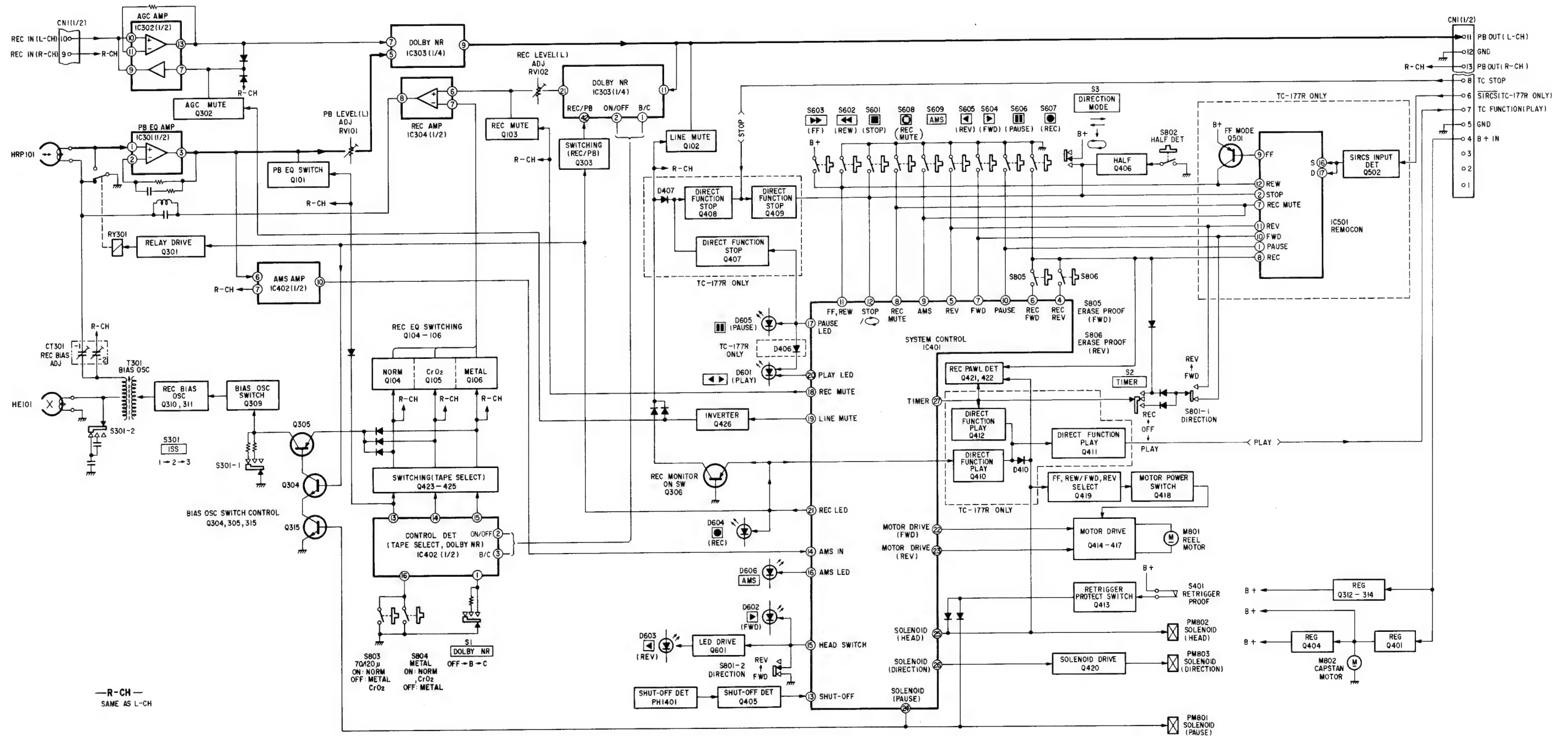
Cut both sides of the resistor and solder the carbon resistor having same value in place of printed one on the conductor side.



# SECTION 1 BLOCK DIAGRAM

**FH-15OR**  
**TC-177R**

**FH-15OR**  
**TC-177R**

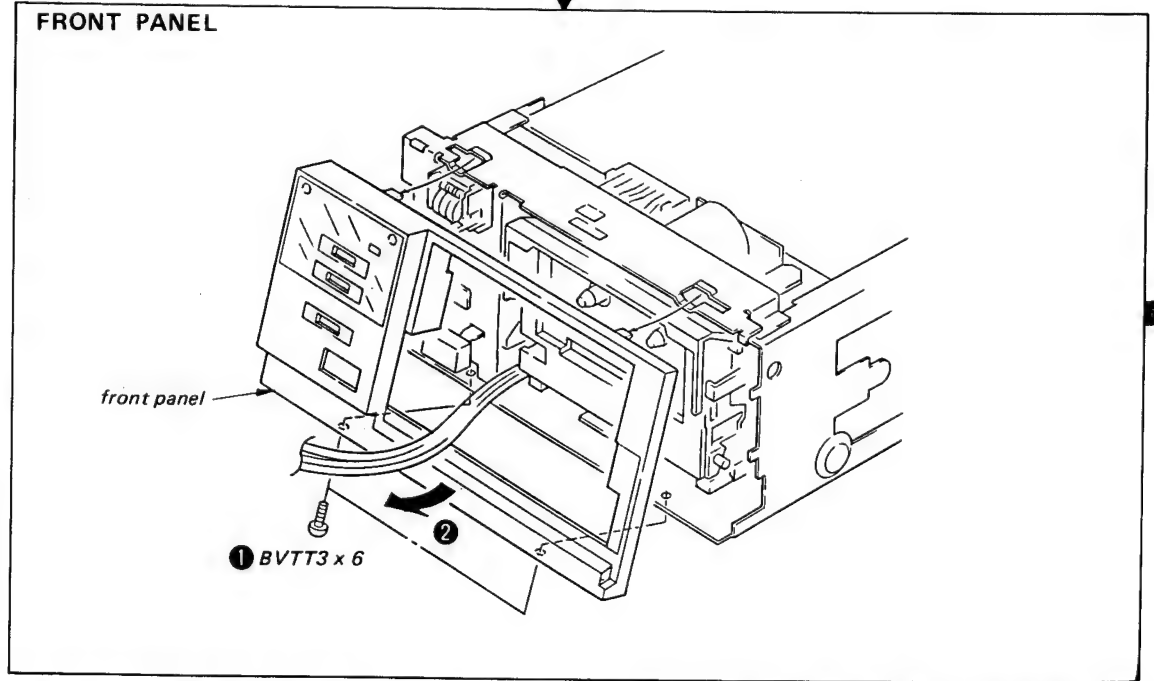
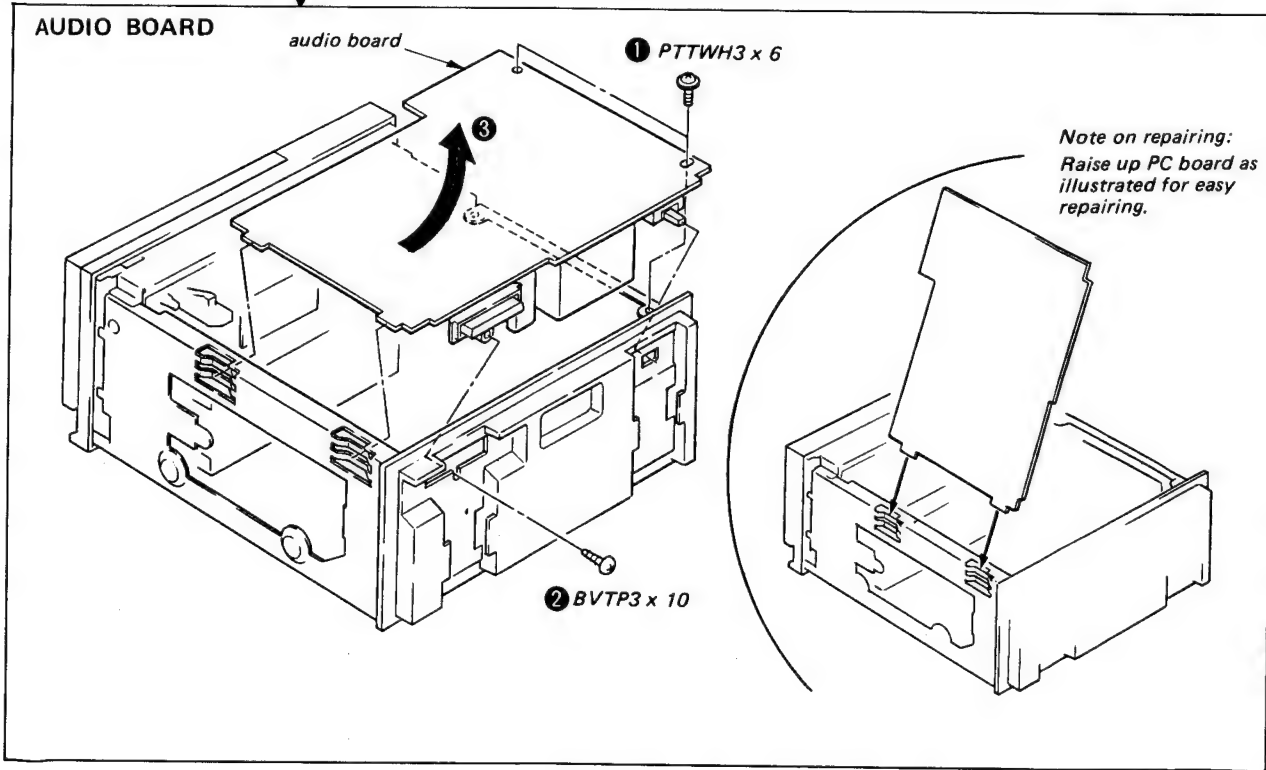
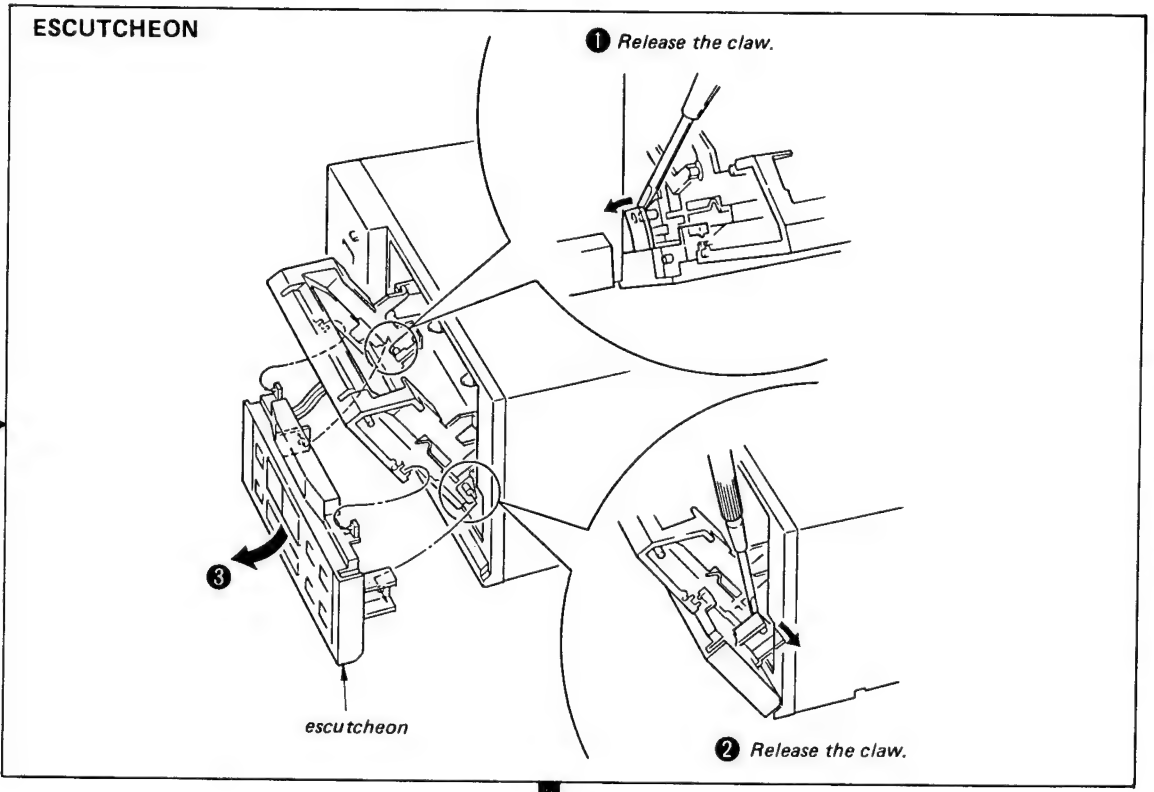
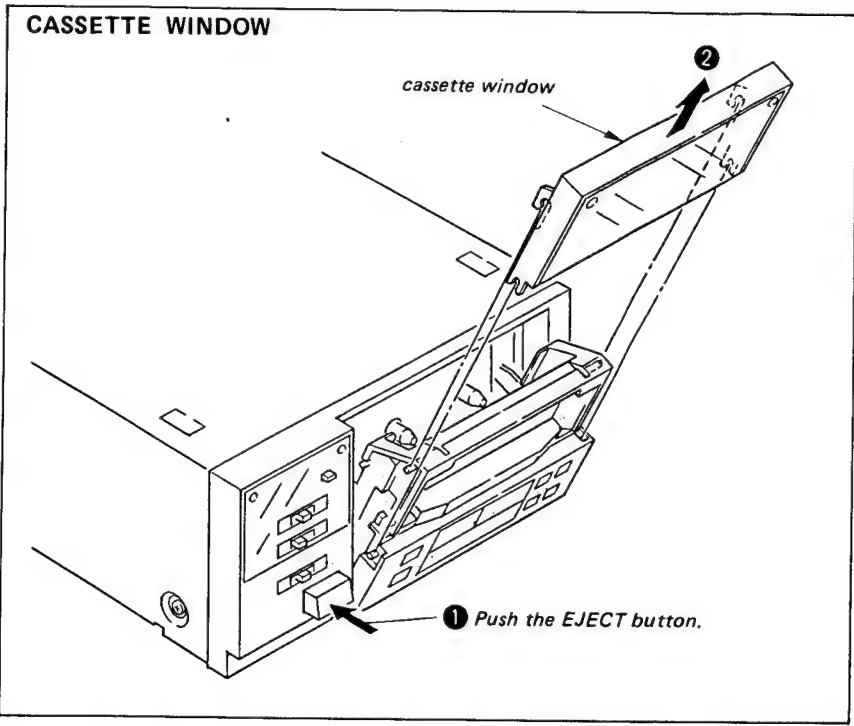


SECTION 2  
DISASSEMBLY

FH-150R TC-177R    FH-150R TC-177R

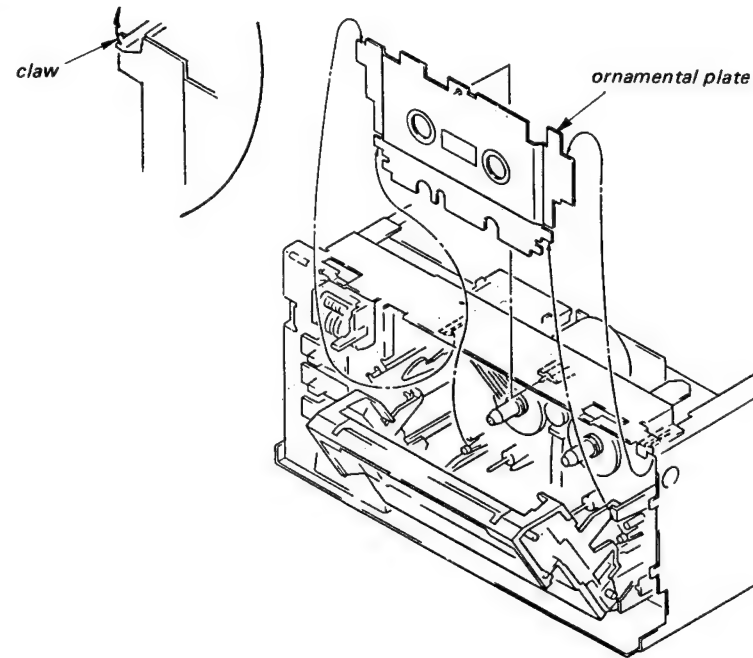
**Note:** Follow the disassembly procedure in the numerical order given.

**CASE REMOVAL**  
Remove case by taking out four screws securing case.

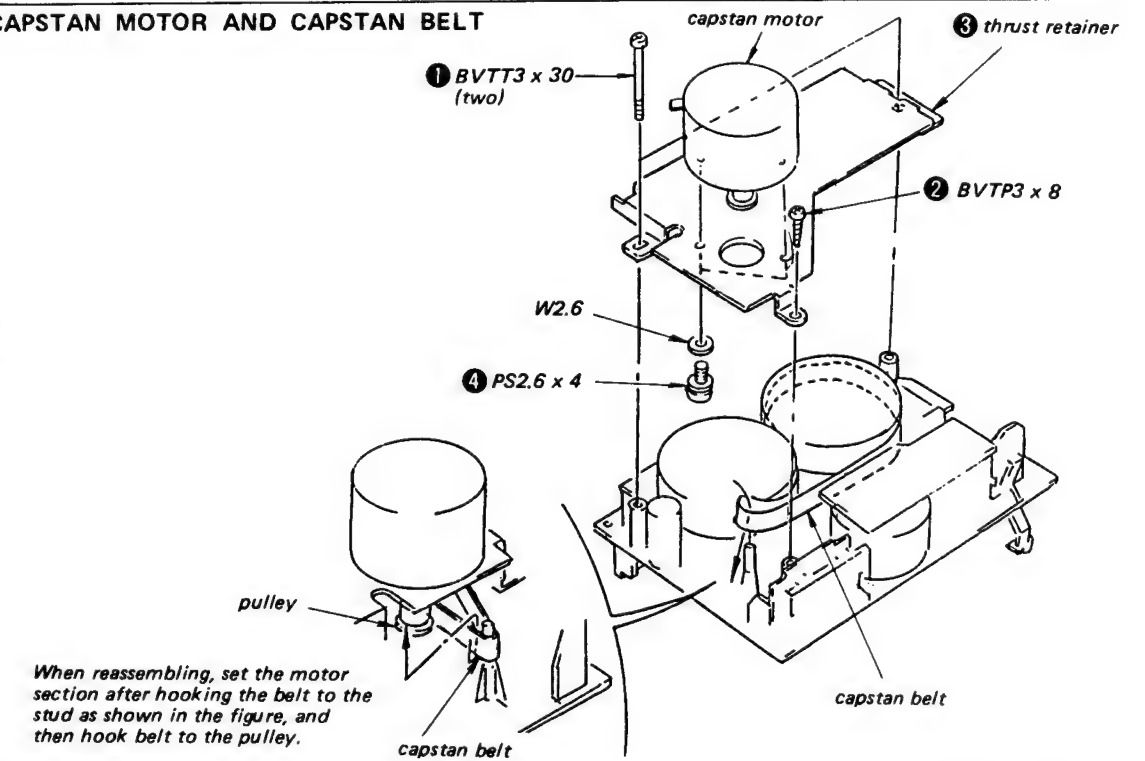




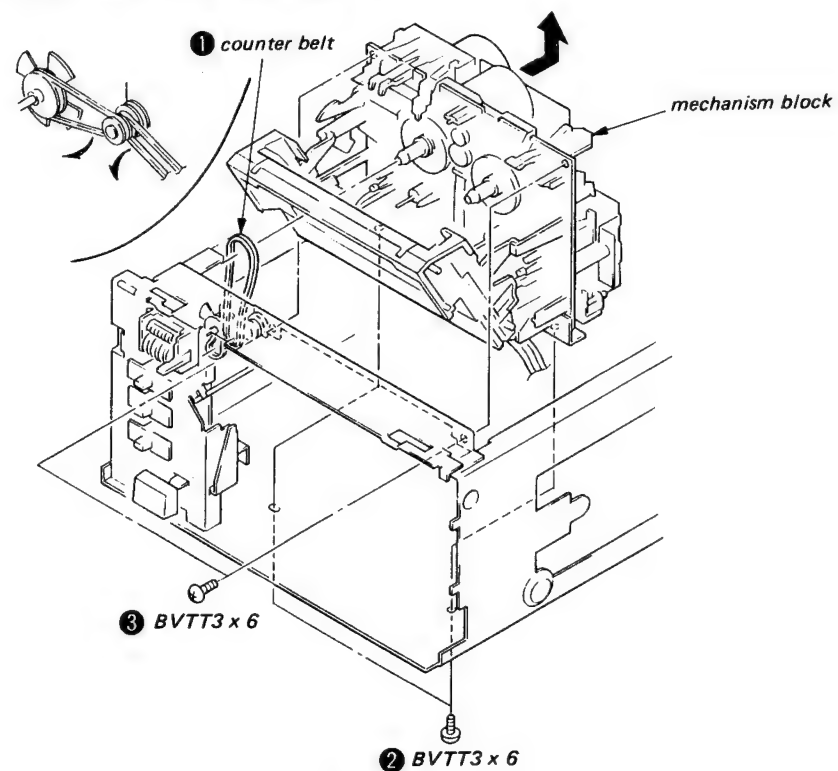
### ORNAMENTAL PLATE



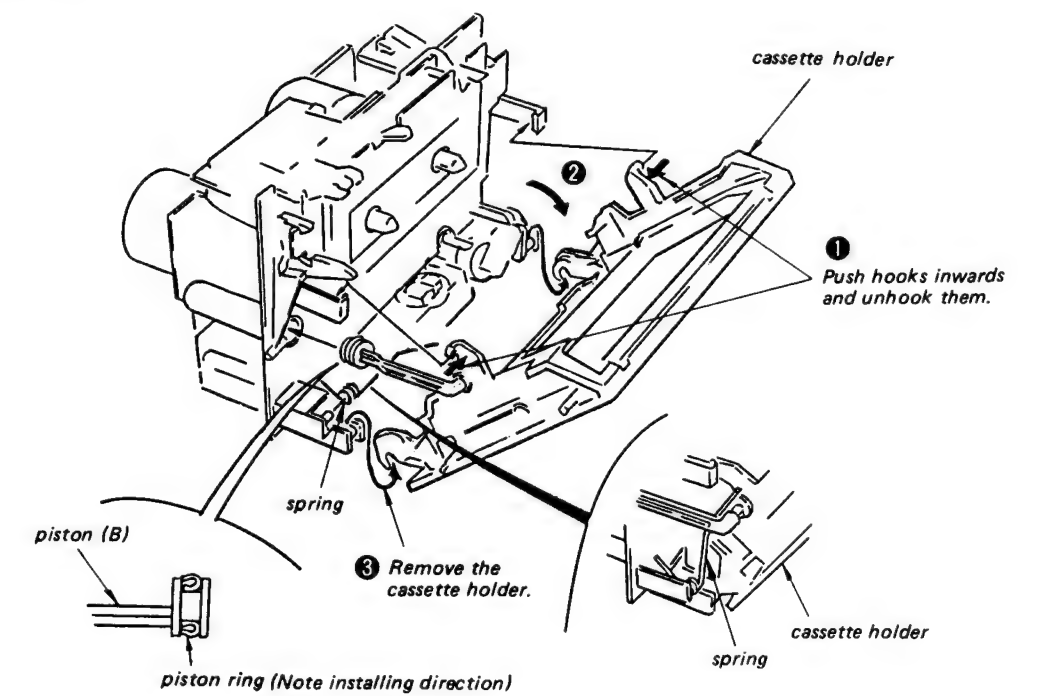
### CAPSTAN MOTOR AND CAPSTAN BELT

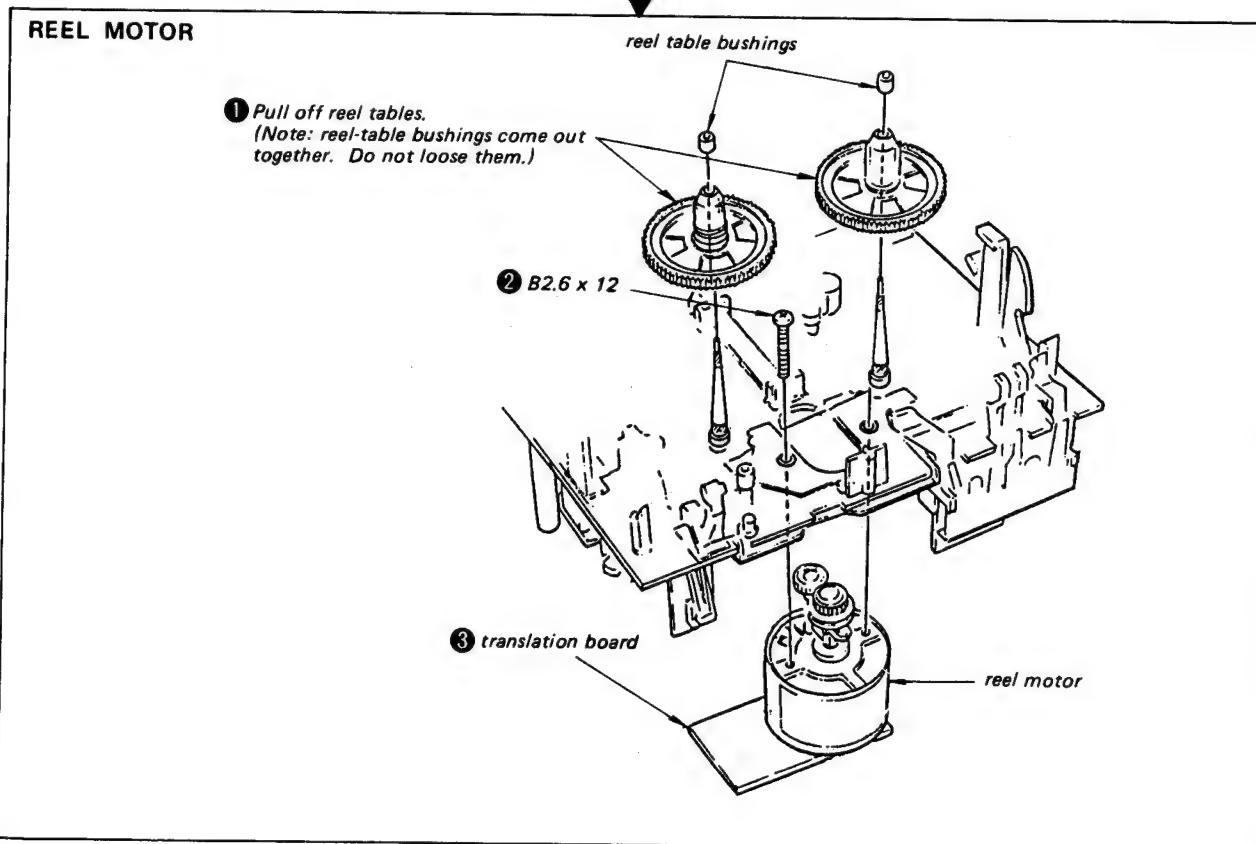
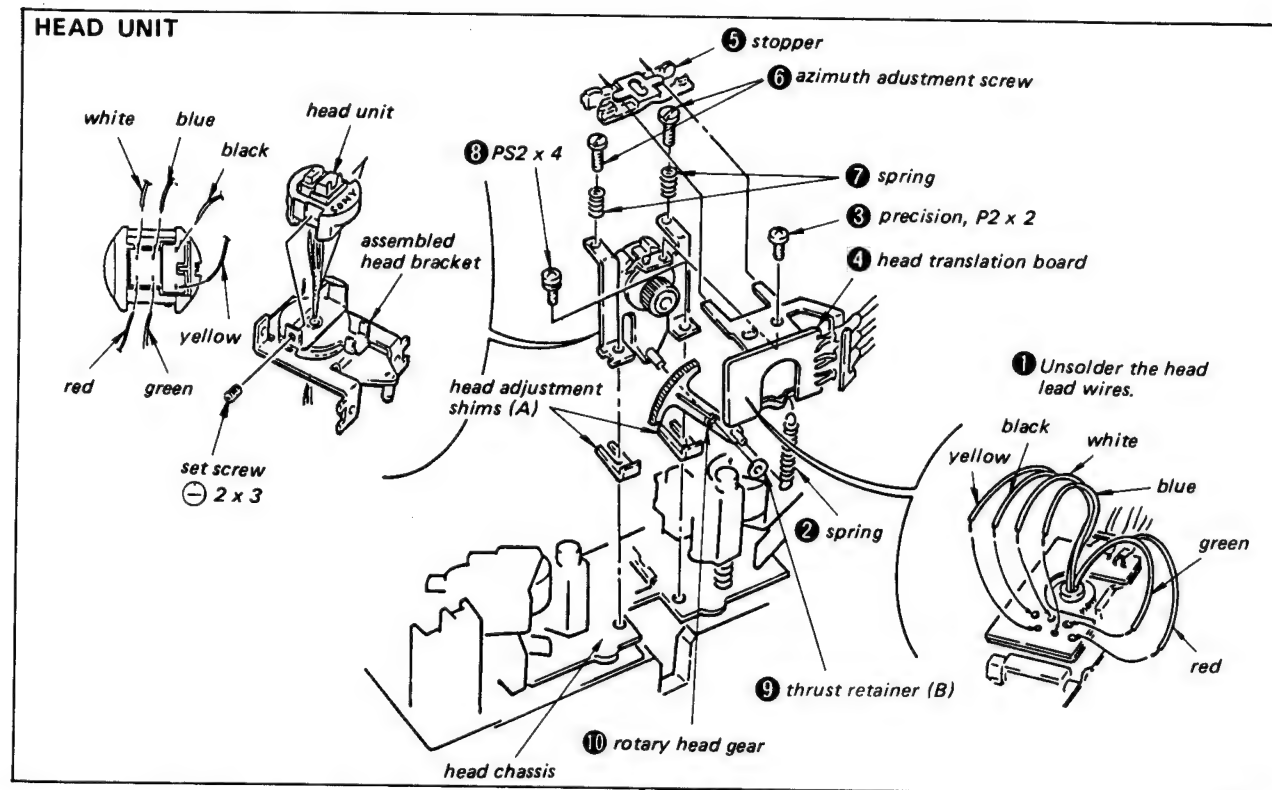


### MECHANISM BLOCK AND COUNTER BELT



### CASSETTE HOLDER





## MEMO

## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:  
record/playback/erase head rubber belts  
capstan  
pinch roller
2. Demagnetize the head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

#### Torque Measurement

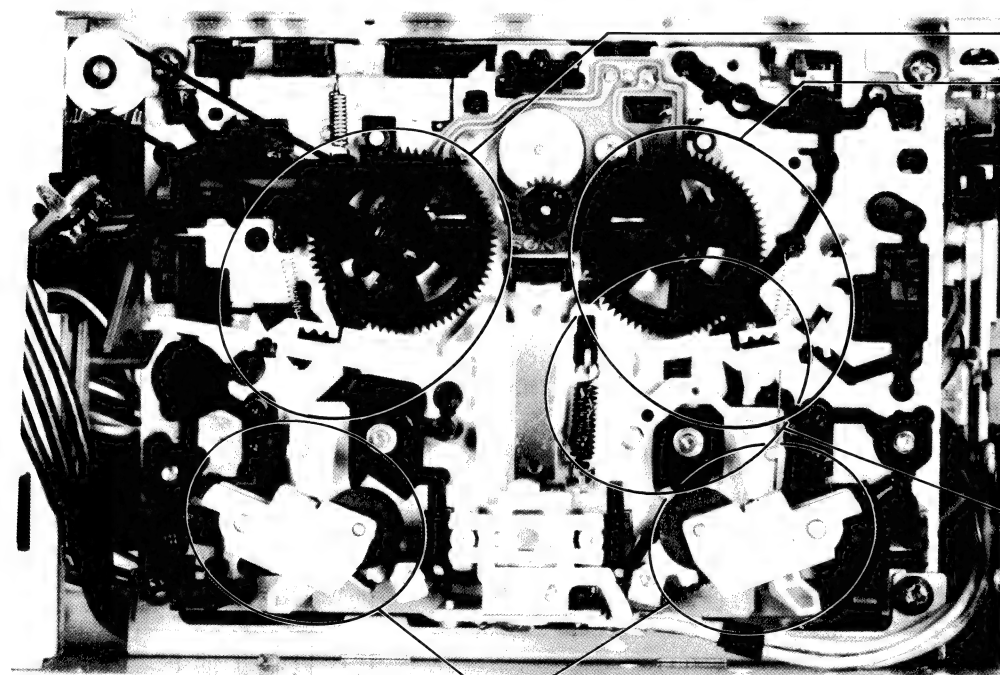
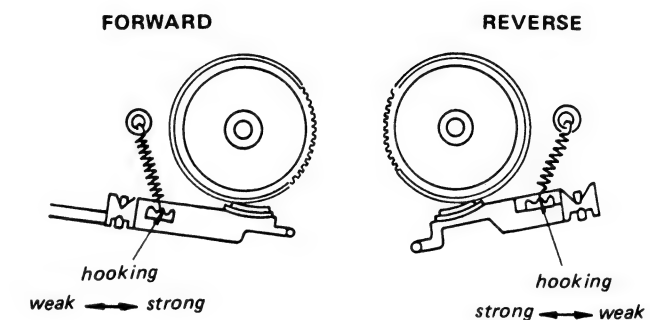
Torque	Torque meter	Meter reading
Forward	CQ-102C	28 – 60 g·cm (0.39 – 0.82 oz·inch)
Reverse	CQ-102RB	
Fast Forward and Rewind	CQ-201B	80 – 150 g·cm (1.1 – 2.07 oz·inch)
Forward Back Tension	CQ-102C	2.5 – 5.5 g·cm (0.03 – 0.07 oz·inch)
Reverse Back Tension	CQ-102RB	2.5 – 7 g·cm (0.03 – 0.09 oz·inch)

#### BACK TENSION ADJUSTMENT

##### – Forward and Reverse Playback Modes –

Forward: Torque Meter CQ-102C, Torque 2.5 – 5.5 g·cm  
(0.03 – 0.07 oz·inch)

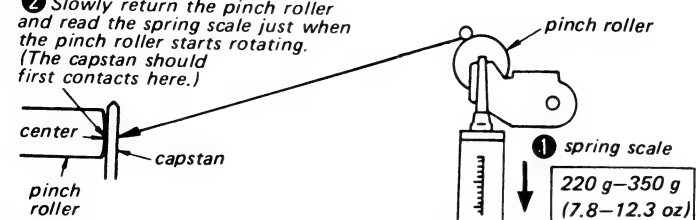
Reverse: Torque Meter CQ-102RB, Torque 2.5 – 7 g·cm  
(0.03 – 0.09 oz·inch)



#### Pinch Roller Pressure Measurement

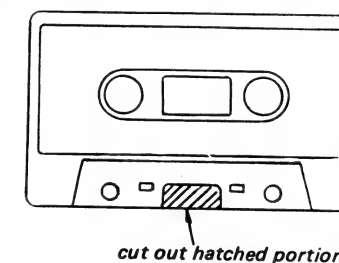
##### – Playback Mode –

2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contacts here.)

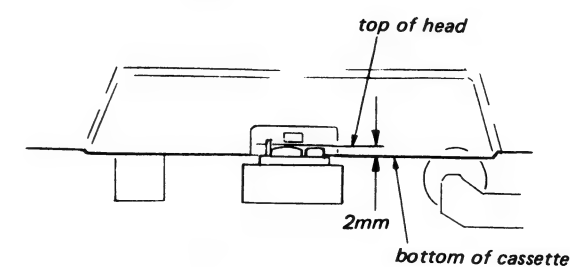


#### Head Position Adjustment in AMS mode

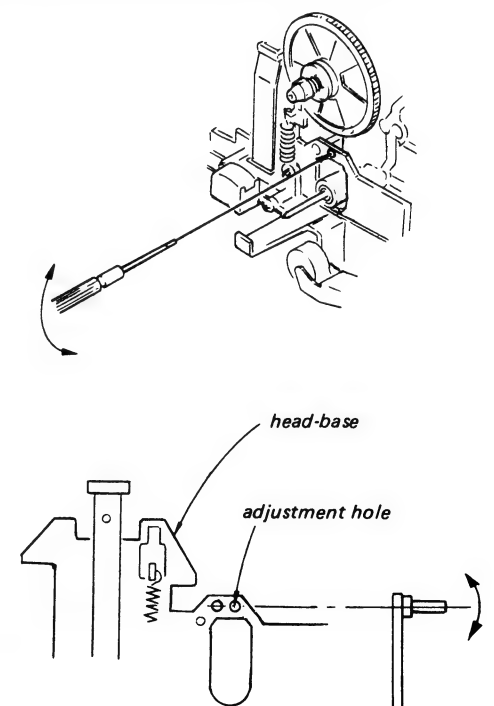
1. Prepare an adjustment cassette as shown below.



2. In AMS mode, confirm that the the distance between top of head and bottom of cassette is 2 mm ±0.1 mm (3/32 inch).



If it is not, insert a small screwdriver to the adjustment hole and adjust the head position by bending a head-base so that the distance between top of head and bottom of cassette is 2 mm ±0.1 mm.





### Precaution on Replacing

As the head center adjustment and the tape path adjustment are affected each other, do not perform them at the same time.

**Note:** When the record/playback/erase head is replaced, be sure to perform the preliminary adjustment first.

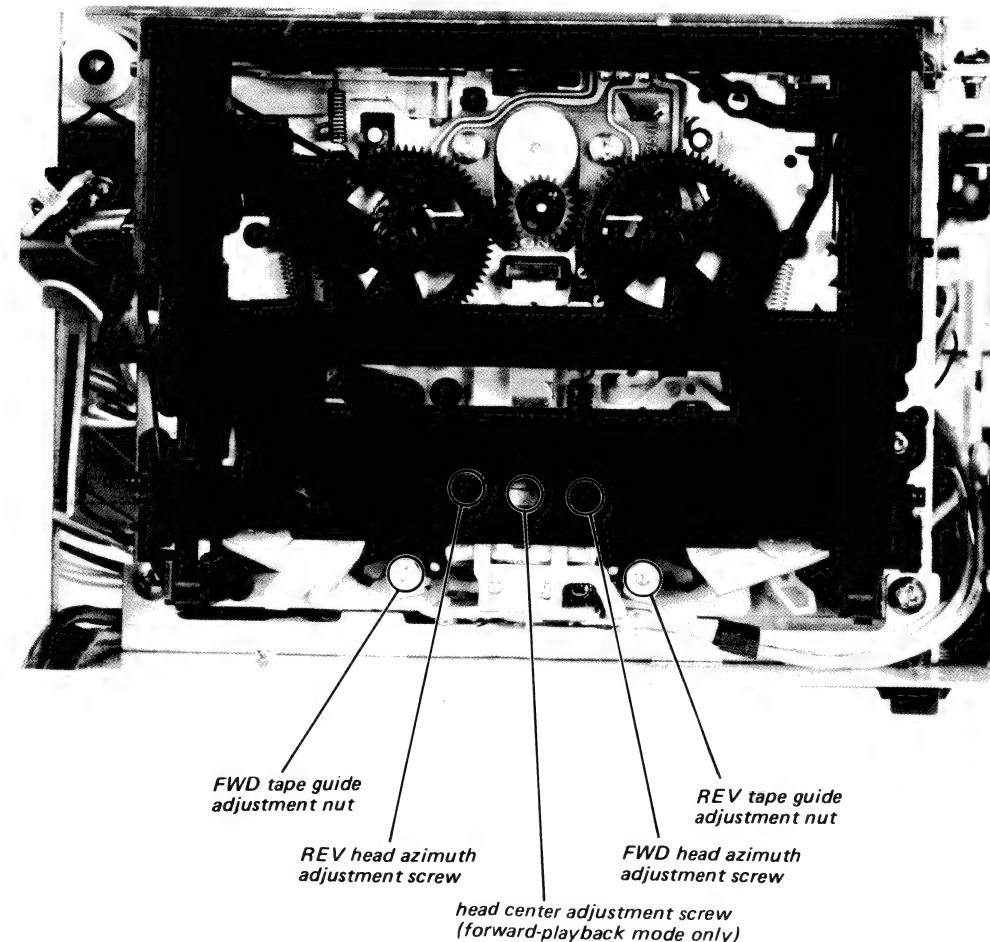
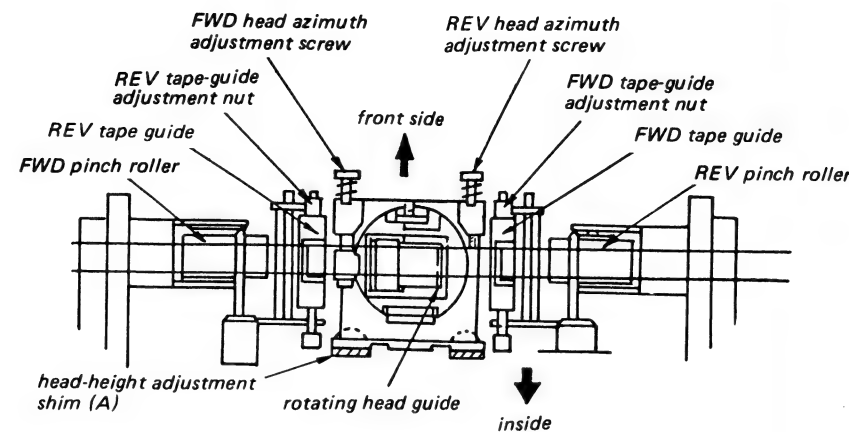
### Head Center Adjustment

1. Insert a mirror tape cassette, CQ-009C or CQ-012C.
2. Place the unit in forward playback mode.
3. When the lower part of the tape is warped, loosen the head center adjustment screw. (Loosen the screw within one turn.)
4. Place the unit in reverse-playback mode.
5. When the upper part of the tape is warped, secure the adjustment screw. (Secure the screw within one turn.)
6. Repeat steps 2 to 5 several times until there is no warp both in forward and reverse mode.
7. If the warp is not disappeared, repeat steps 2 to 6 after adding or removing the head height adjustment shim (A).
8. After adjustment, lock the head center adjustment screw with locking compound.

### Tape Path Adjustment

1. Clean the pinch roller and the record/playback/erase head with soft cloth moistened with alcohol.
2. Mode: playback  
Refer to step 1 of the Record/playback Head Azimuth Adjustment on page TC-16 for the setup.
3. Adjust the FWD azimuth adjustment screw in the forward-playback mode and the REV azimuth adjustment screw in the reverse-playback mode so that the oscilloscope reads the maximum output and lissajous figure is in 30 angle reading on the oscilloscope across the LINE OUT.
4. Adjust the FWD tape-guide nut in the forward-playback mode and the REV tape-guide nut in the reverse-playback mode for an in-phase lissajous pattern.  
The turning amount of the nuts should be within 3/4 turns.
5. Repeat steps 3 and 4 several times until no improvement is obtained.
6. Play a mirror tape cassette in the forward-playback mode.
7. Confirm there is no tape curl at the tape guide.

**Note:** After these adjustments, be sure to perform the Record/playback Head Azimuth Adjustment on page TC-16.

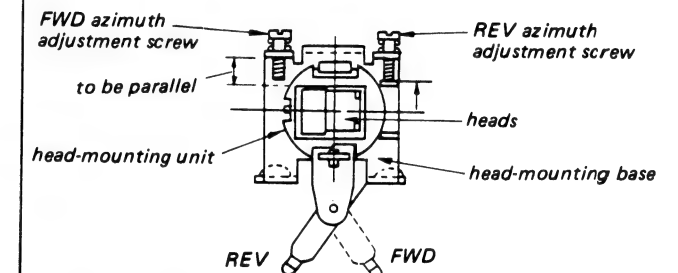


### HEAD UNIT ADJUSTMENT WHEN REPLACED

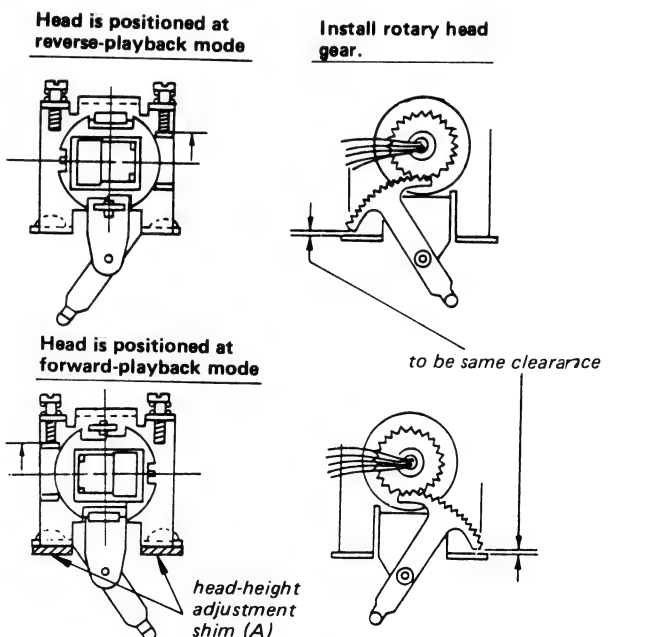
Perform the following preliminary adjustments before proceeding to the Head Center and Tape Path Adjustments.

### Preliminary Adjustment

1. Install head-mounting unit on the head-mounting base by threading head lead wires through the round hole in the head-mounting base. Also refer to page TC-9.
2. By adjusting both head-azimuth adjustment screws in both forward-playback and reverse-playback mode head positions, align the head-compartment edge line in parallel with the edge line of the head-mounting unit at the azimuth adjustment screws. (visual adjustment)



Be sure to orient the rotary-head gear as shown below.



3. Reassemble the head assembly, head translation board, head-height adjustment shims (A), etc. in the reverse manner of disassembly on page TC-9.
4. Perform the Head-Center and Tape-Path Adjustments on pages TC-13 and TC-14.
5. Perform the Head-Azimuth Adjustment on page TC-16.

## 3-2. ELECTRICAL ADJUSTMENTS

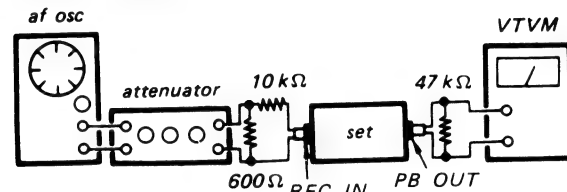
**Note:** The adjustment should be performed in the order given in this service manual.  
The adjustments should be performed for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch: OFF  
TIMER switch: OFF  
ISS switch: 2

- Standard Record:**  
Deliver the standard input signal level to the input jack and control the attenuator to obtain the standard output signal level.

## — Record Mode —



## Standard Input Level

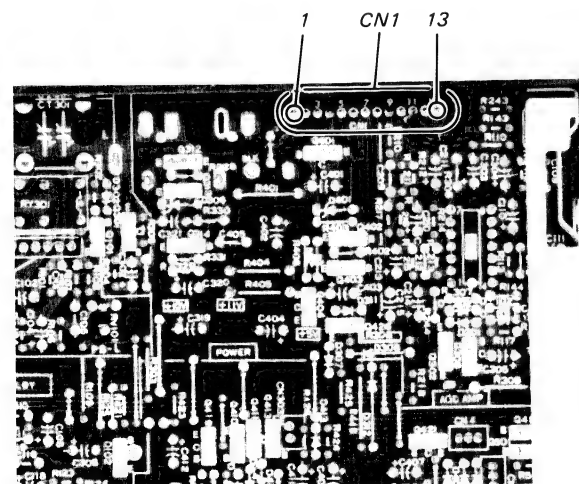
	REC IN
source impedance	10 kΩ
input level	0.44 V (−5 dB)

## Standard Output Level

	PB OUT
load impedance	47 kΩ
output level	0.44 V (−5 dB)

## Locations of REC IN and PB OUT

	CN1 terminal No.		
	L-CH	R-CH	GND
REC IN	10	9	12
PB OUT	11	13	12

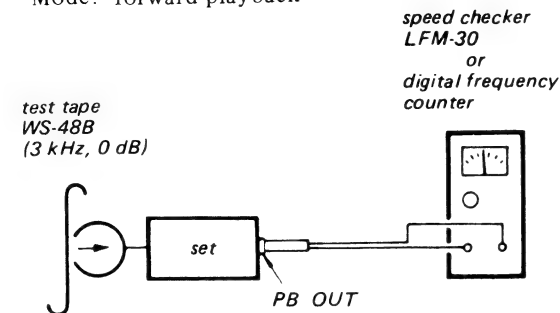


## Tape Speed Adjustment

## Procedure:

See the left for locations of REC IN and PB OUT.

Mode: forward-playback

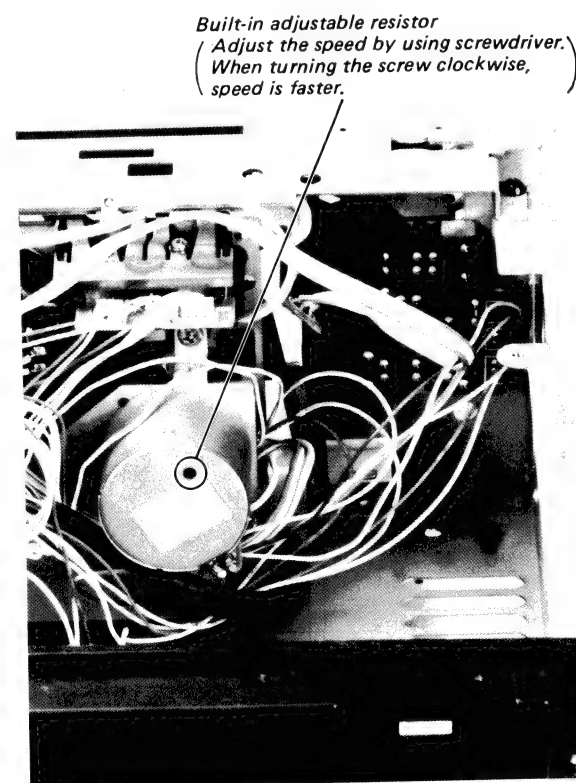


## Specification:

Speed checker	Digital frequency counter
−1 ~ +1 %	2,970 Hz to 3,030 Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

Adjustment Location: Motor (M802)



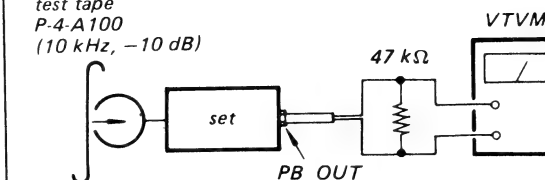
## Record/playback Head Azimuth Adjustment

## Procedure:

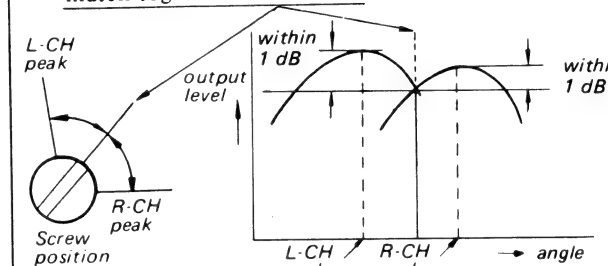
See page TC-15 for locations of REC IN and PB OUT.

1. Mode: forward-playback

test tape  
P-4-A100  
(10 kHz, −10 dB)

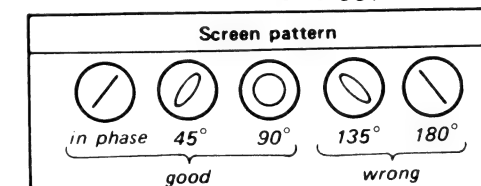
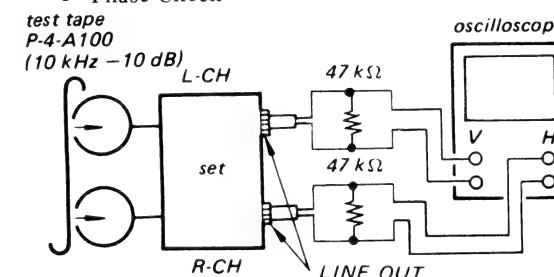


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screws until both of output levels match together within 1 dB.



## • Phase Check

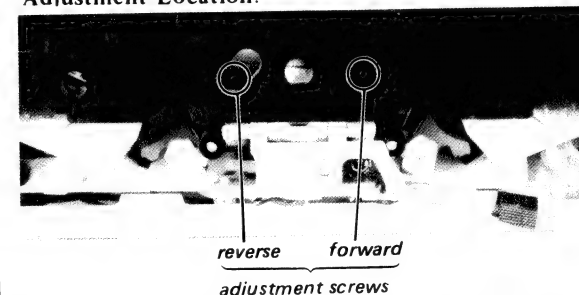
test tape  
P-4-A100  
(10 kHz −10 dB)



3. Set in the reverse-playback mode and repeat the steps 1 – 2.

4. After the adjustment, lock the screws with locking compound.

Adjustment Location:



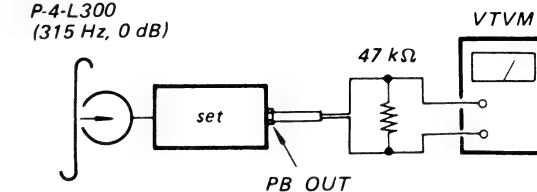
## Playback Level Adjustment

## Procedure:

See page TC-15 for locations of REC IN and PB OUT.

Mode: playback

test tape  
P-4-L300  
(315 Hz, 0 dB)



Adjust the RV101 (L-CH) and RV201 (R-CH) so that the specification is met.

## Specification:

PB OUT level: 0.41 to 0.46 V  
(−5.5 to −4.5 dB)

Level difference between channels:  
less than 0.5 dB

Check that the PB OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location: audio board

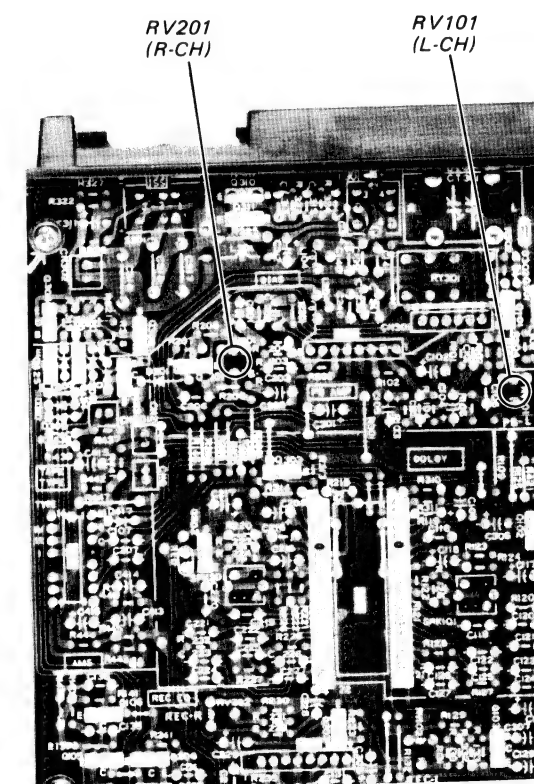


Fig. 1

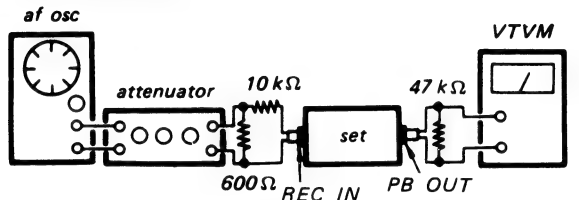
3-2. ELECTRICAL ADJUSTMENTS

**Note:** The adjustment should be performed in the order given in this service manual.  
The adjustments should be performed for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.  
DOLBY NR switch: OFF  
TIMER switch: OFF  
ISS switch: 2

- Standard Record:  
Deliver the standard input signal level to the input jack and control the attenuator to obtain the standard output signal level.

Record Mode



Standard Input Level

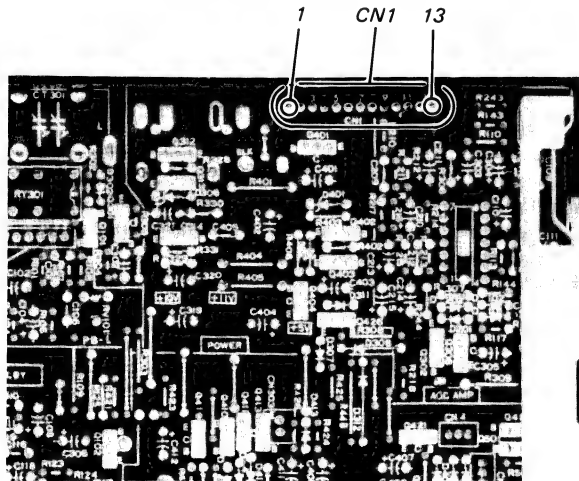
	REC IN
source impedance	10 kΩ
input level	0.44 V (−5 dB)

Standard Output Level

	PB OUT
load impedance	47 kΩ
output level	0.44 V (−5 dB)

Locations of REC IN and PB OUT

	CN1 terminal No.		
	L-CH	R-CH	GND
REC IN	10	9	12
PB OUT	11	13	12

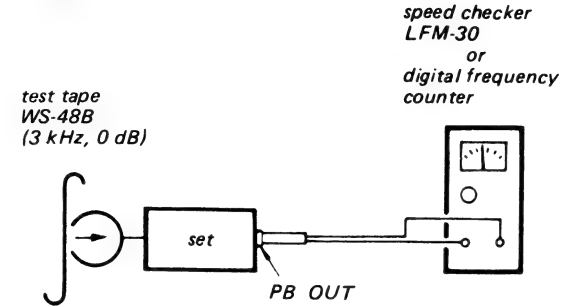


Tape Speed Adjustment

Procedure:

See the left for locations of REC IN and PB OUT.

Mode: forward-playback

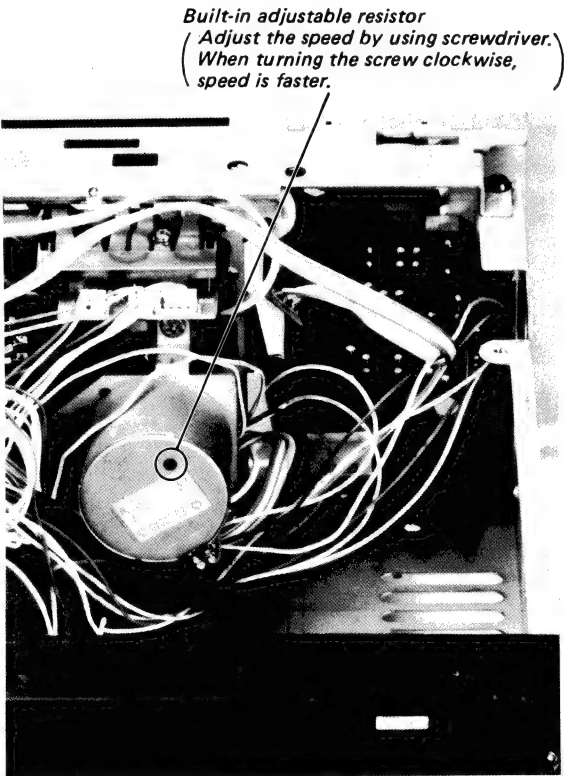


Specification:

Speed checker	Digital frequency counter
−1 +1 %	2,970 Hz to 3,030 Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

Adjustment Location: Motor (M802)



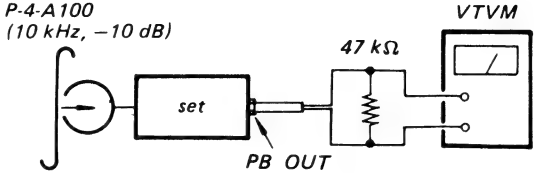
Record/playback Head Azimuth Adjustment

Procedure:

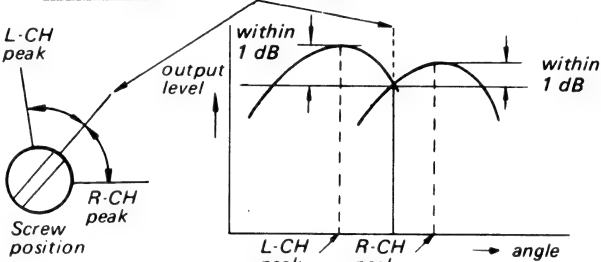
See page TC-15 for locations of REC IN and PB OUT.

1. Mode: forward-playback

test tape  
P-4-A100  
(10 kHz, −10 dB)

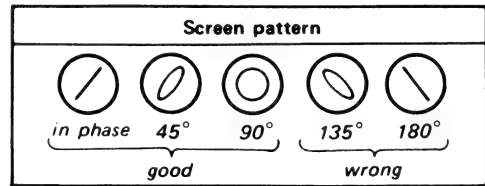
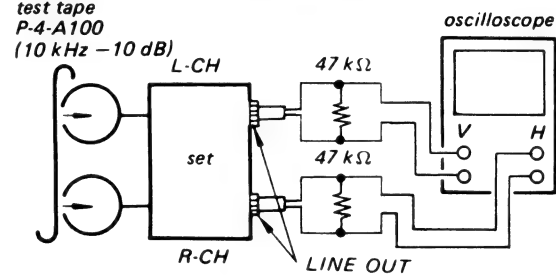


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screws until both of output levels match together within 1 dB.



Phase Check

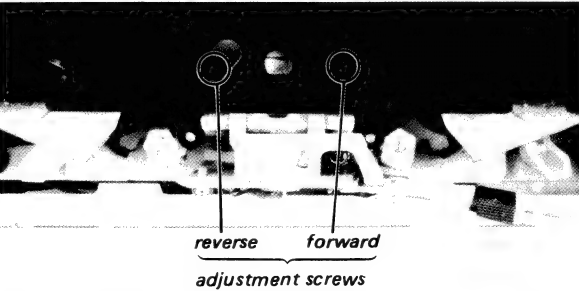
test tape  
P-4-A100  
(10 kHz −10 dB)



3. Set in the reverse-playback mode and repeat the steps 1 – 2.

4. After the adjustment, lock the screws with locking compound.

Adjustment Location:



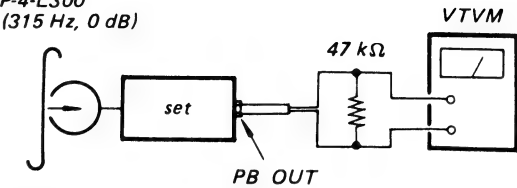
Playback Level Adjustment

Procedure:

See page TC-15 for locations of REC IN and PB OUT.

Mode: playback

test tape  
P-4-L300  
(315 Hz, 0 dB)



Adjust the RV101 (L-CH) and RV201 (R-CH) so that the specification is met.

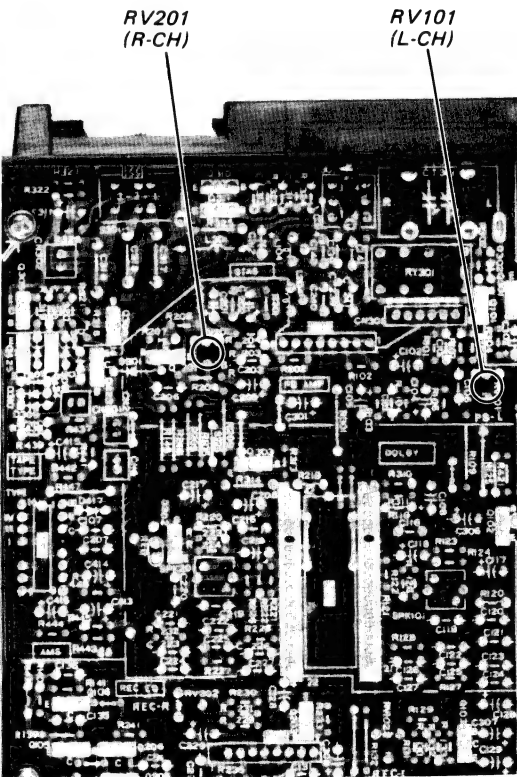
Specification:

PB OUT level: 0.41 to 0.46 V  
(−5.5 to −4.5 dB)

Level difference between channels:  
less than 0.5 dB

Check that the PB OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location: audio board





**Note:** Before performing Record Bias/Record Level Adjustment, connect pattern.

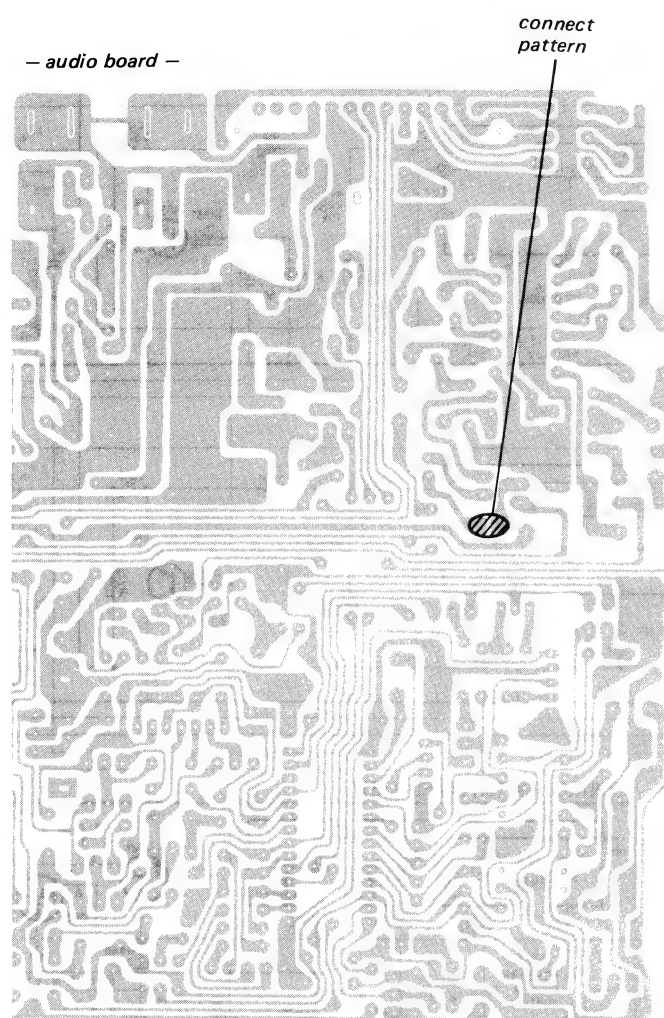


Fig. 1 Connecting Portion at the Adjustment

### Record Bias Adjustment

#### Setting:

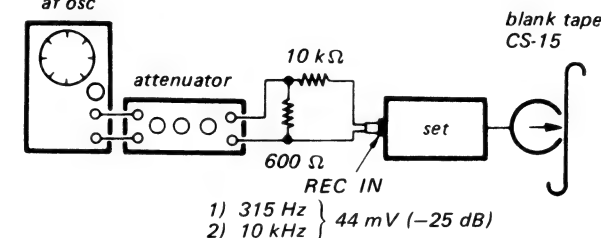
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

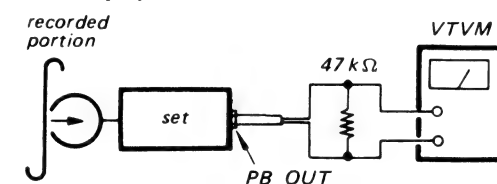
#### Procedure:

See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record  
af osc



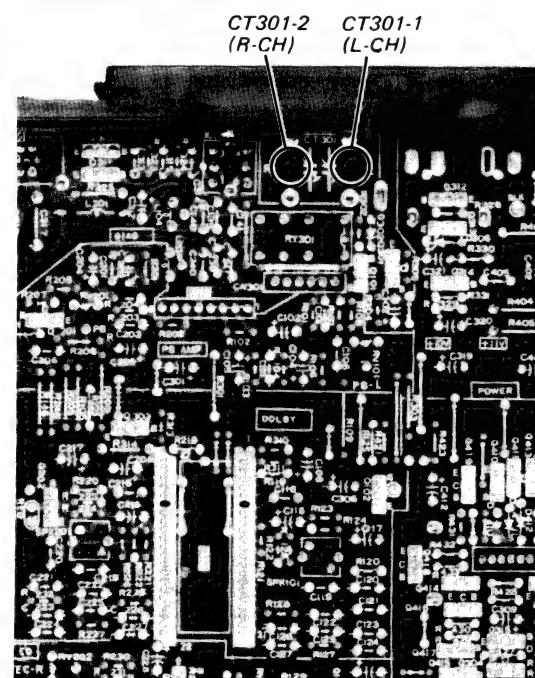
2. Mode: playback



Confirm that the 10 kHz playback output is 0 dB relative to the 315 Hz output. If necessary, adjust CT301-1 (L-CH), CT301-2 (R-CH) and repeat the steps given above.

3. After the adjustment, disconnect pattern.

Adjustment Location: audio board



### Record Level Adjustment

#### Setting:

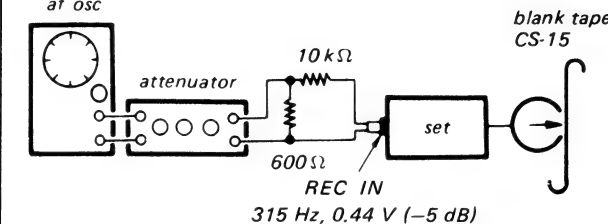
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

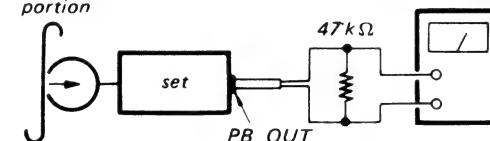
#### Procedure:

See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record  
af osc



2. Mode: playback  
recorded portion



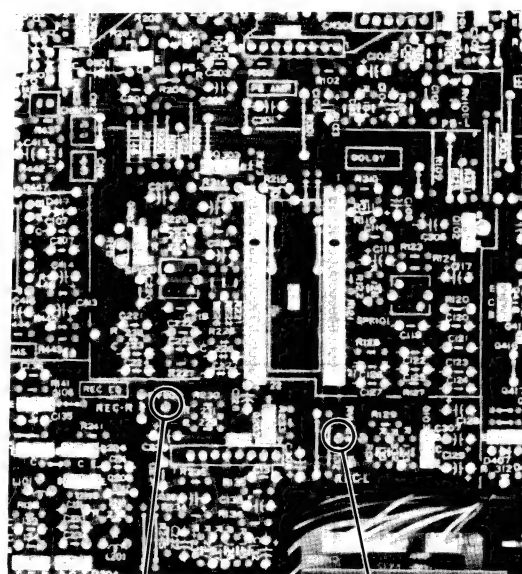
3. Play back the signal recorded in step 1.

Confirm that the signal level is within the specification below. If necessary, adjust RV102 (L-CH), RV202 (R-CH) and repeat the steps 1 - 3.

#### Specification:

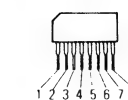
PB OUT level: 0.41 to 0.46 V  
(-5.5 to -4.5 dB)

4. After the adjustment, disconnect pattern.

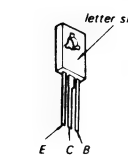


### ● Semiconductor Lead Layouts

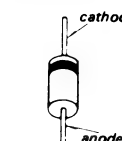
LA3160



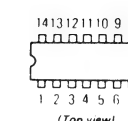
2SB548-R  
2SD809-K



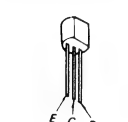
HZ11A1L  
HZ11B2L  
HZ6B1L



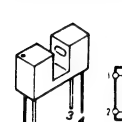
LA3220



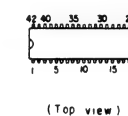
2SB1013  
2SD1387



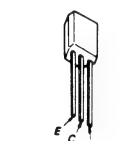
SPI201-20



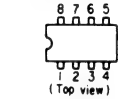
CX20187



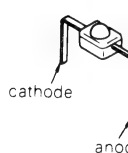
2SC2603-F  
DTA114ES  
DTA144ES  
DTC144ES



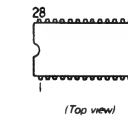
NJM4558S



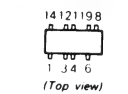
GL-1EG102  
GL-1HY102  
GL-1PR102



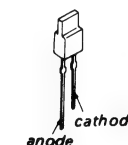
TC9312N-001



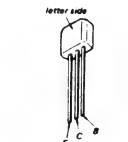
CX10034



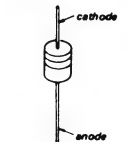
GL-8PG1



2SA1175  
2SD1020

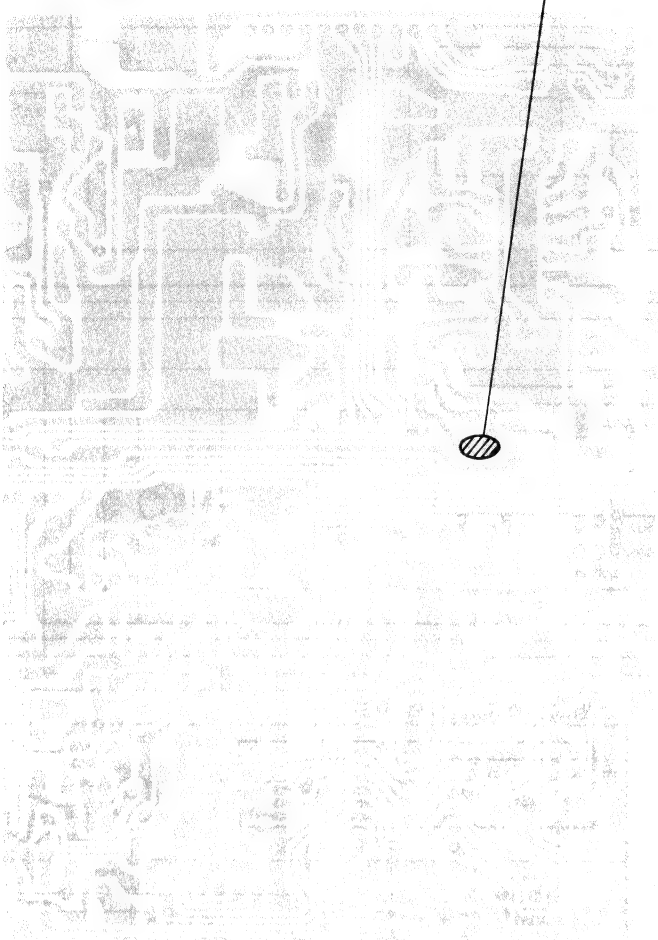


1SS202-1





– audio board –



*Fig. 1 Connecting Portion at the Adjustment*

## Record Level Adjustment

**Setting:**

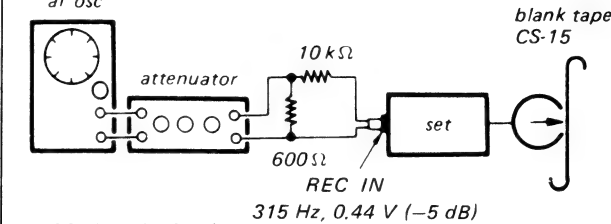
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

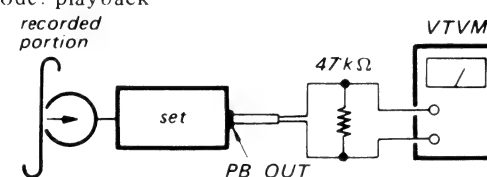
**Procedure:**

See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record  
*af osc*

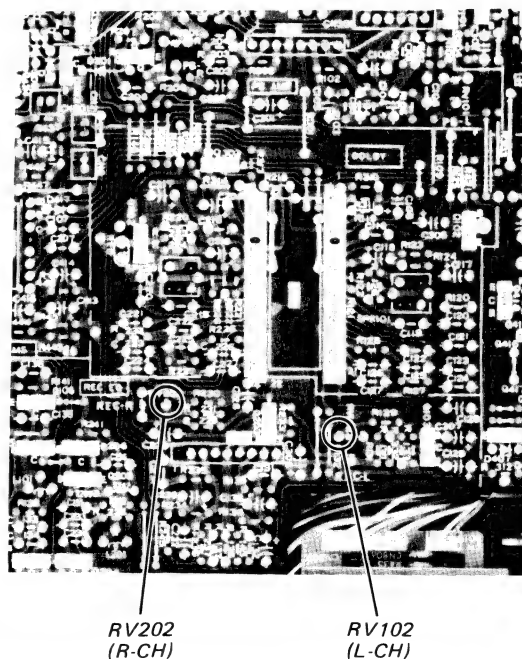


2. Mode: playback  
*recorded*

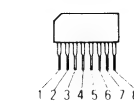


- Confirm that the signal level is within the specification below. If necessary, adjust RV102 (L-CH), RV202 (R-CH) and repeat the steps 1 – 3.

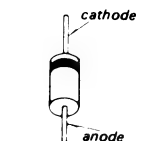
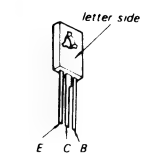
PB OUT level: 0.41 to 0.46 V  
(−5.5 to −4.5 dB)



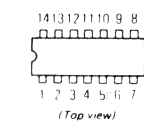
## LA3160



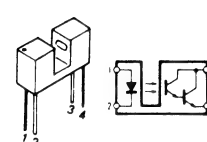
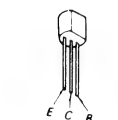
A diagram of a letter 'R' on a key. The key has three stems labeled E, C, and B. An arrow points to the letter 'R' with the text 'letter side'.



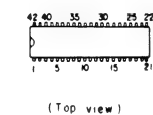
## 1413121110 9 8



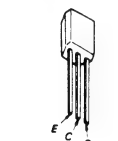
A diagram of a three-strapped harness. It consists of a rectangular body with three vertical straps extending downwards. The straps are labeled from left to right as E, C, and R.



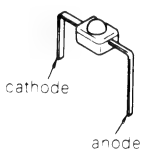
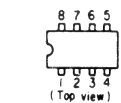
(Top view)



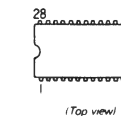
A diagram of a three-pin electrical plug. The top part is a rectangular housing. Three pins extend downwards from the housing. The leftmost pin is labeled 'E', the middle pin is labeled 'C', and the rightmost pin is labeled 'T'.



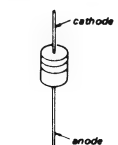
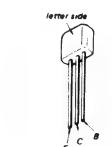
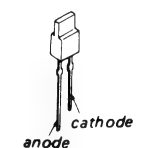
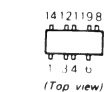
(Top view)



(Top view)



(Top view)



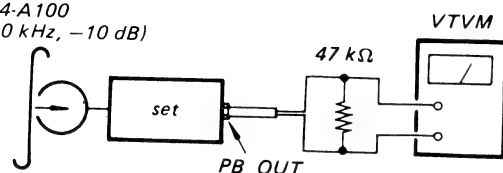
**Note:** Before performing Record Bias/Record Level Adjustment, connect pattern.

### Record/playback Head Azimuth Adjustment

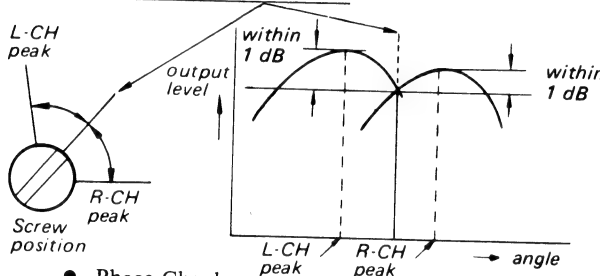
#### Procedure:

See page TC-15 for locations of REC IN and PB OUT.

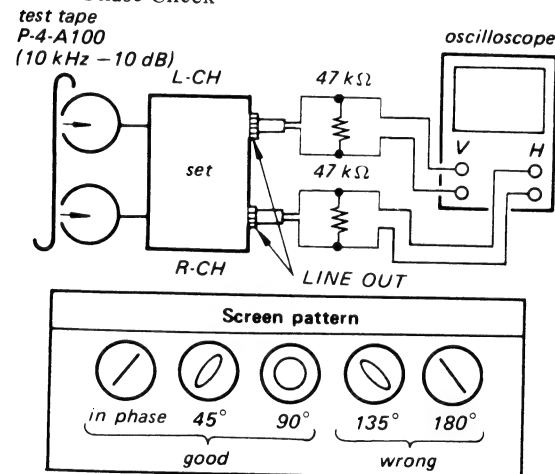
1. Mode: forward-playback  
test tape  
P-4-A100  
(10 kHz, -10 dB)



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screws until both of output levels match together within 1 dB.



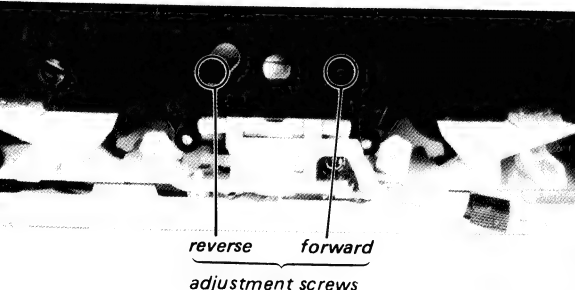
#### ● Phase Check



3. Set in the reverse-playback mode and repeat the steps 1 - 2.

4. After the adjustment, lock the screws with locking compound.

#### Adjustment Location:



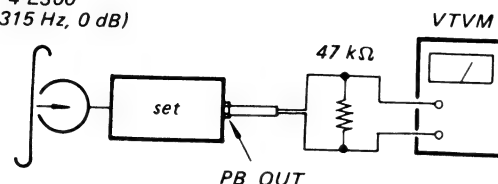
### Playback Level Adjustment

#### Procedure:

See page TC-15 for locations of REC IN and PB OUT.

Mode: playback

test tape  
P-4-L300  
(315 Hz, 0 dB)



Adjust the RV101 (L-CH) and RV201 (R-CH) so that the specification is met.

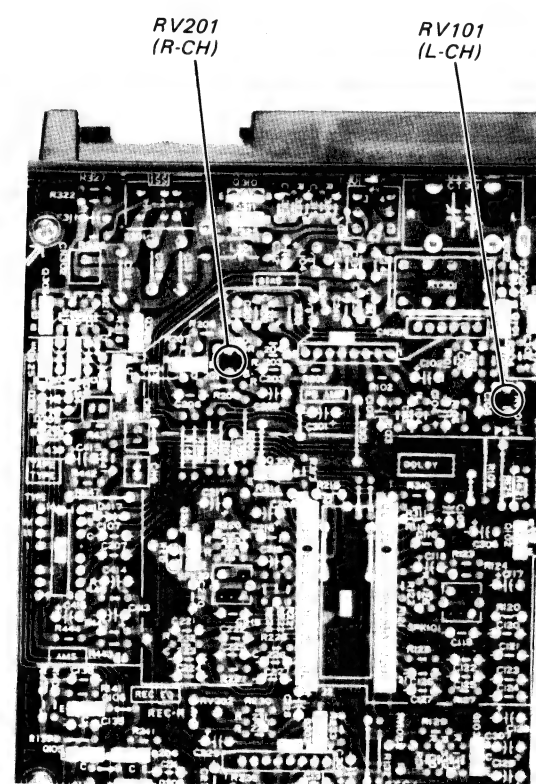
#### Specification:

PB OUT level: 0.41 to 0.46 V  
(-5.5 to -4.5 dB)

Level difference between channels:  
less than 0.5 dB

Check that the PB OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location: audio board



— audio board —

connect pattern

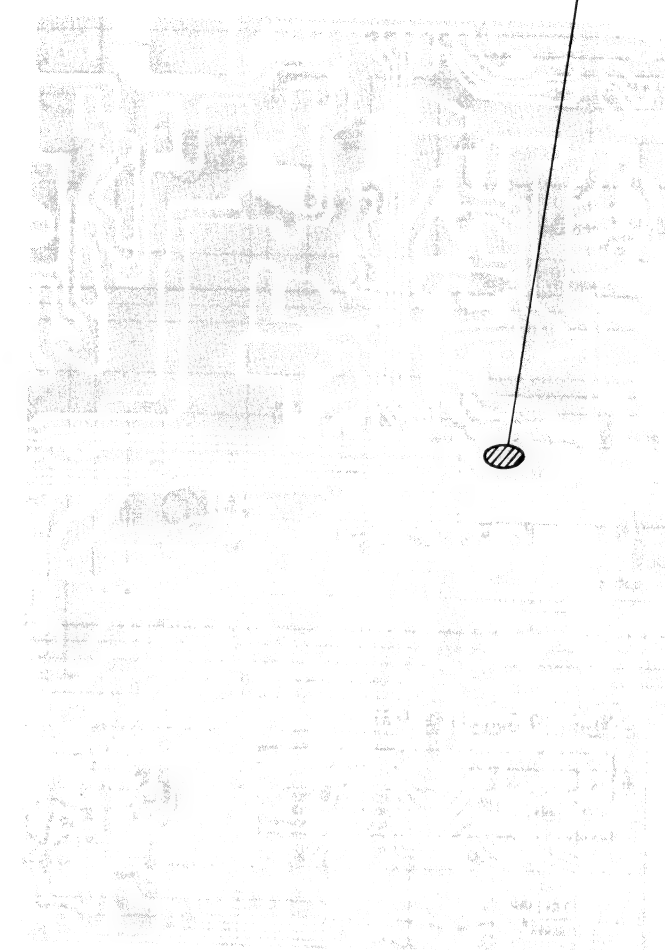


Fig. 1 Connecting Portion at the Adjustment

### Record Bias Adjustment

#### Setting:

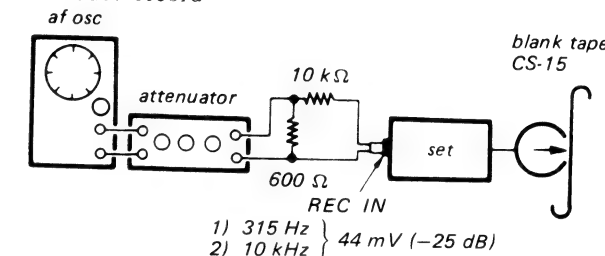
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

#### Procedure:

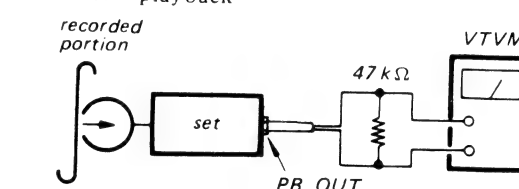
See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record



1) 315 Hz } 44 mV (-25 dB)  
2) 10 kHz }

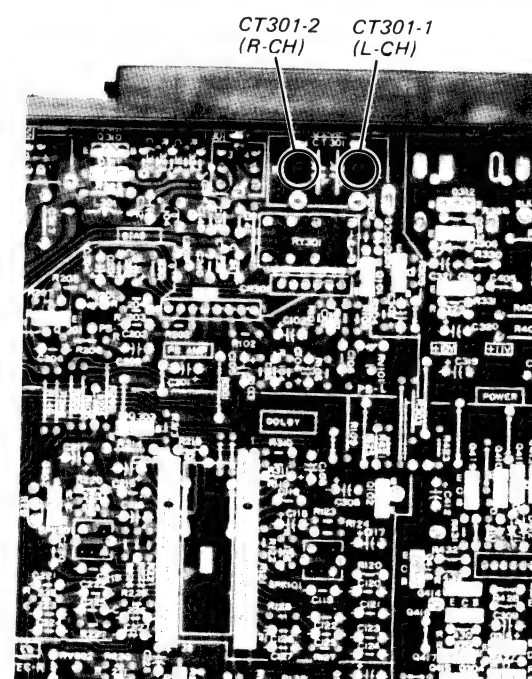
2. Mode: playback



Confirm that the 10 kHz playback output is 0 dB relative to the 315 Hz output. If necessary, adjust CT301-1 (L-CH), CT301-2 (R-CH) and repeat the steps given above.

3. After the adjustment, disconnect pattern.

Adjustment Location: audio board



### Record Level Adjustment

#### Setting:

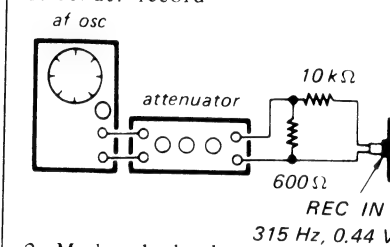
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

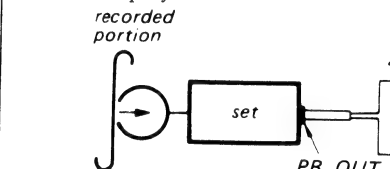
#### Procedure:

See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record



2. Mode: playback

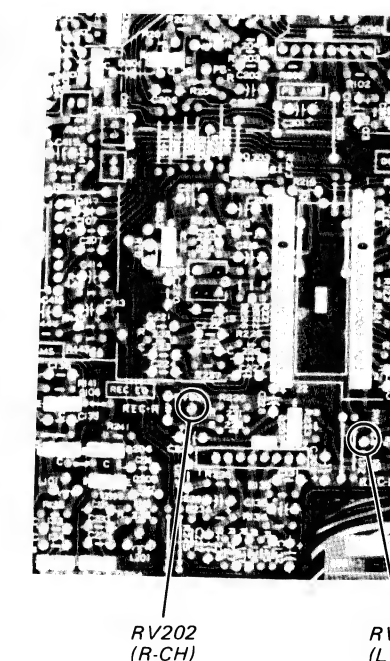


3. Play back the signal recorded in record mode. Confirm that the signal level is within 1 dB of the specification below. If necessary, adjust RV202 (R-CH) and repeat the steps given above.

#### Specification:

PB OUT level: 0.41 to 0.46 V  
(-5.5 to -4.5 dB)

4. After the adjustment, disconnect pattern.

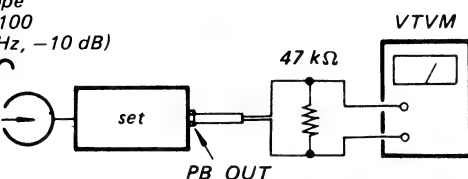


# Record/playback Head Azimuth Adjustment

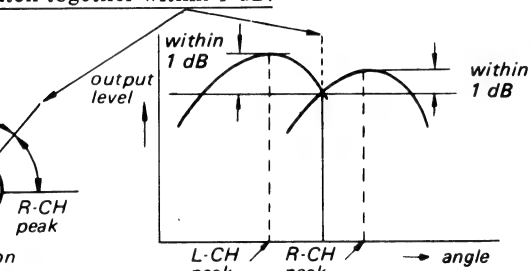
**Procedure:**  
See page TC-15 for locations of REC IN and PB OUT.

Mode: forward-playback

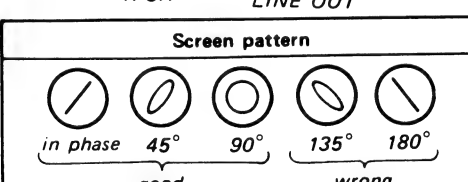
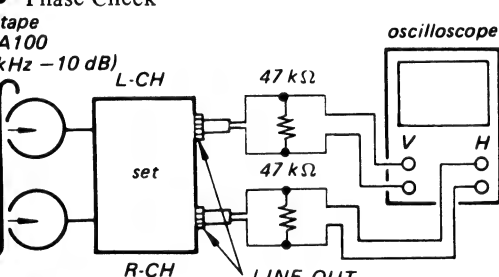
Test tape  
P-4-L300  
(315 Hz, -10 dB)



Turn the adjustment screw for the maximum output level. If these levels do not match, turn the adjustment screws until both of output levels match together within 1 dB.



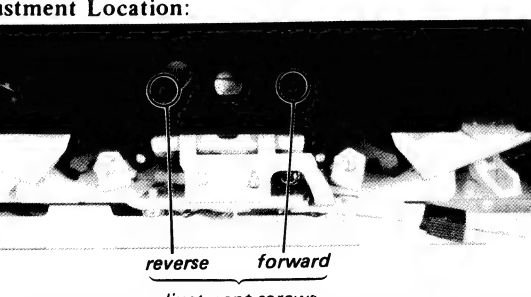
## Phase Check



Set in the reverse-playback mode and repeat the steps 1 - 2.

After the adjustment, lock the screws with locking compound.

Adjustment Location:



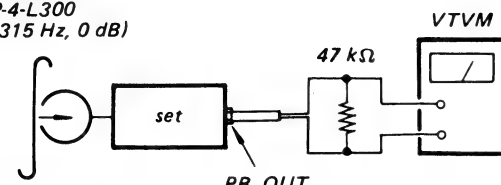
# Playback Level Adjustment

**Procedure:**

See page TC-15 for locations of REC IN and PB OUT.

Mode: playback

Test tape  
P-4-L300  
(315 Hz, 0 dB)



Adjust the RV101 (L-CH) and RV201 (R-CH) so that the specification is met.

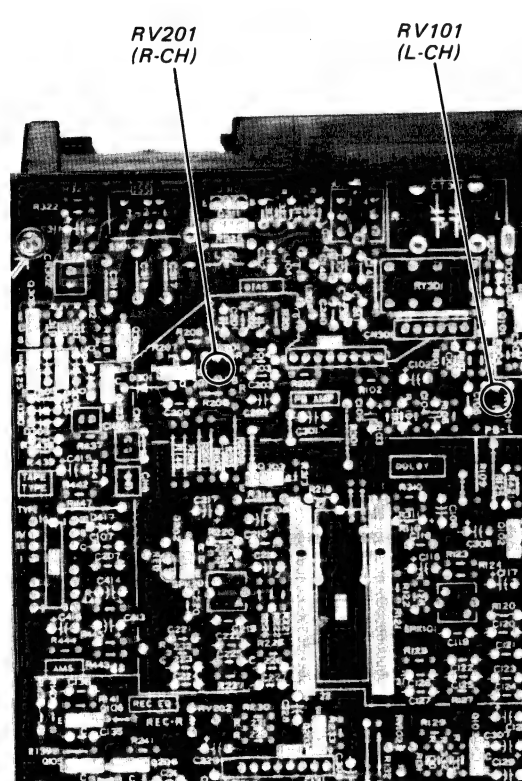
**Specification:**

PB OUT level: 0.41 to 0.46 V  
(-5.5 to -4.5 dB)

Level difference between channels:  
less than 0.5 dB

Check that the PB OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location: audio board



**Note:** Before performing Record Bias/Record Level Adjustment, connect pattern.

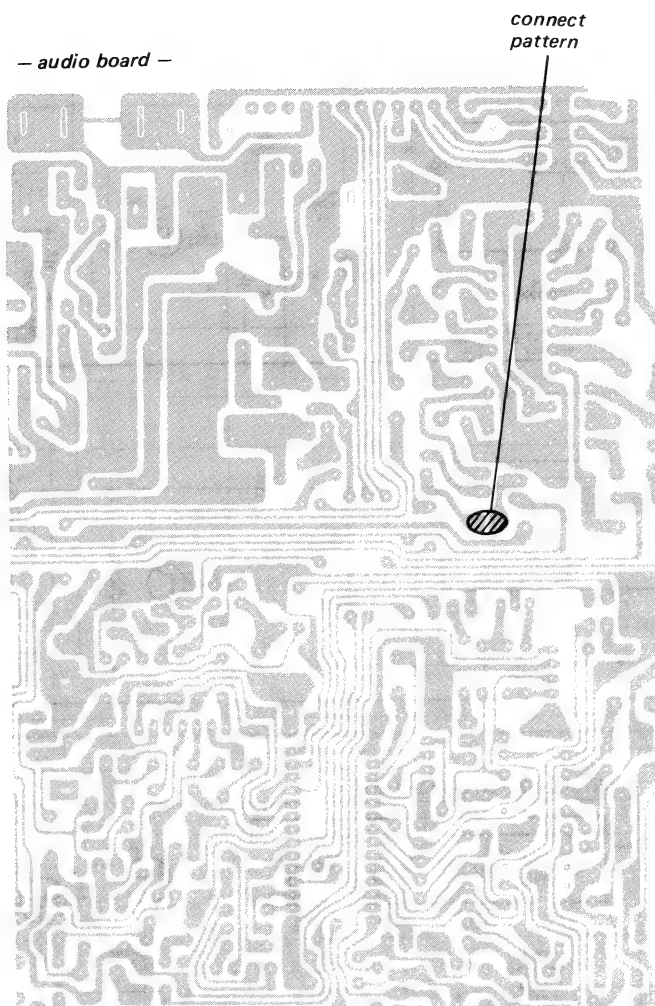


Fig. 1 Connecting Portion at the Adjustment

# Record Bias Adjustment

**Setting:**

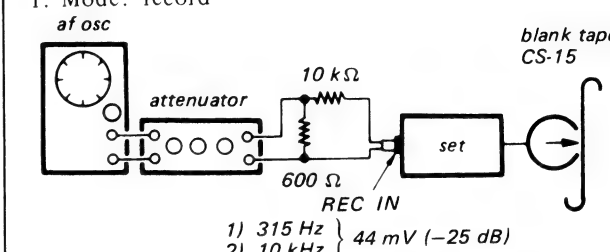
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

**Procedure:**

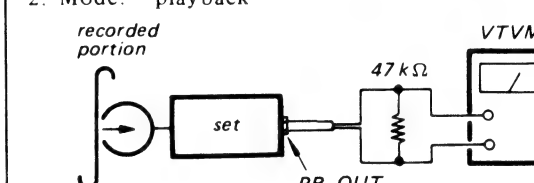
See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record



1) 315 Hz  
2) 10 kHz } 44 mV (-25 dB)

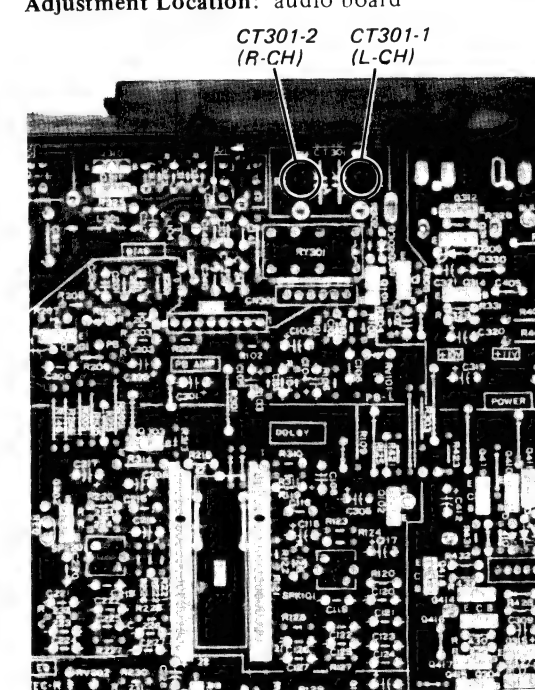
2. Mode: playback



Confirm that the 10 kHz playback output is 0 dB relative to the 315 Hz output. If necessary, adjust CT301-1 (L-CH), CT301-2 (R-CH) and repeat the steps given above.

3. After the adjustment, disconnect pattern.

Adjustment Location: audio board



# Record Level Adjustment

**Setting:**

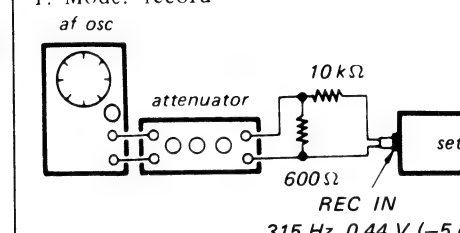
ATTENUATOR: standard record  
(See page TC-15.)

Connect pattern as shown in Fig. 1.

**Procedure:**

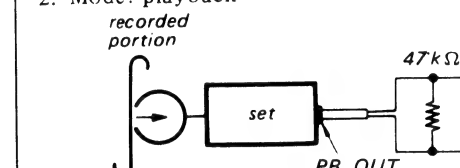
See page TC-15 for locations of REC IN and PB OUT.

1. Mode: record



315 Hz, 0.44 V (-5 dB)

2. Mode: playback

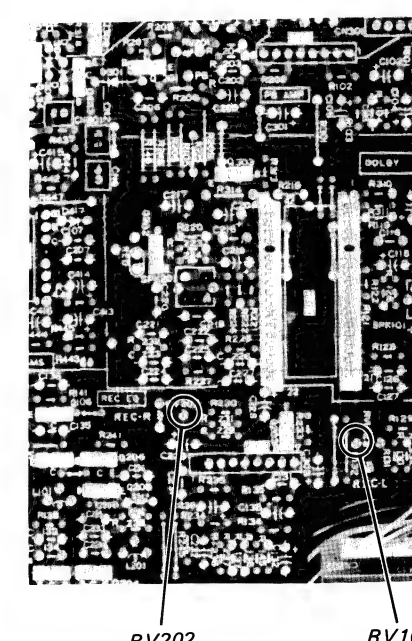


3. Play back the signal recorded in step 1. Confirm that the signal level is within specification below. If necessary, adjust RV202 (R-CH) and repeat the steps 1 - 2.

**Specification:**

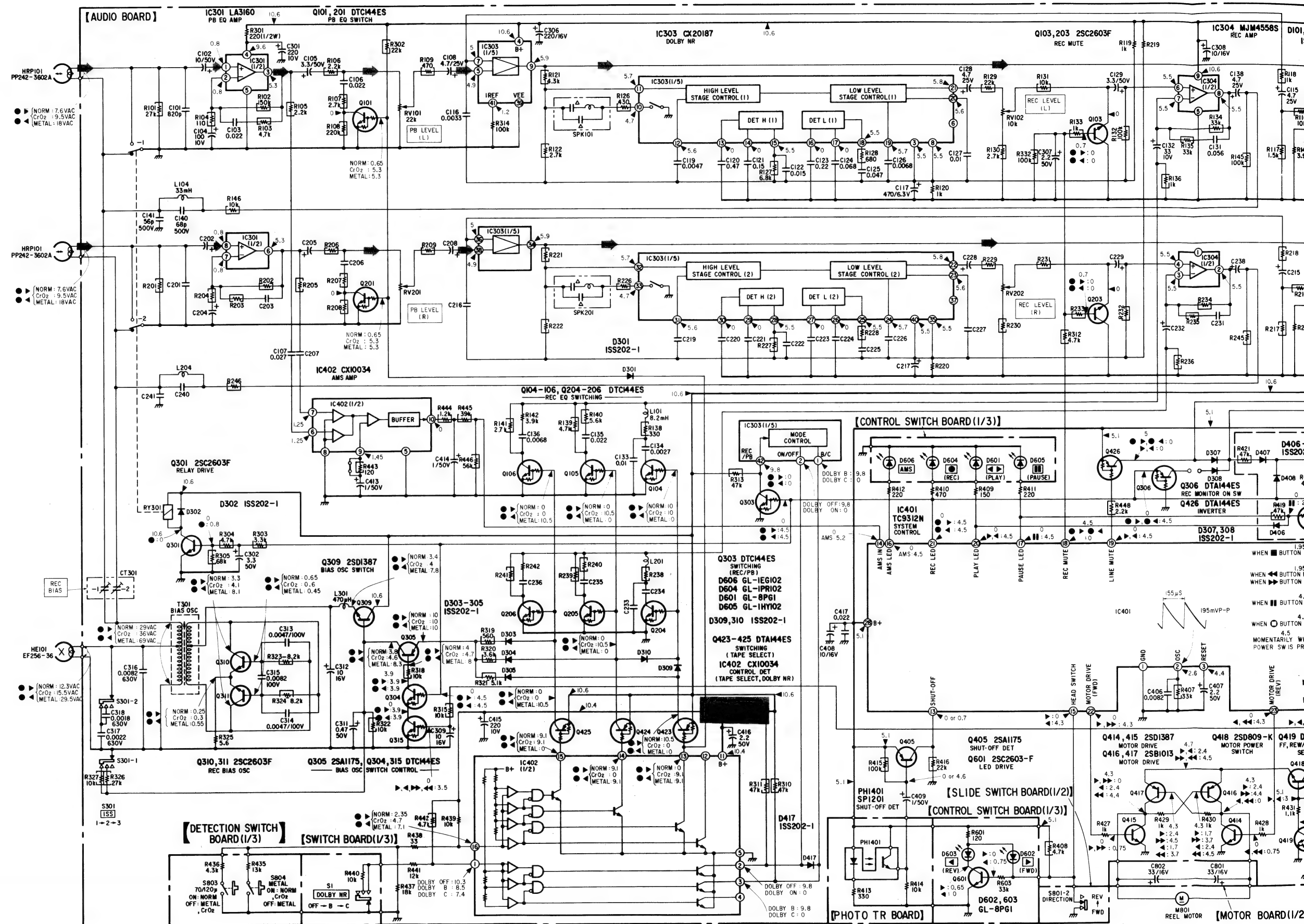
PB OUT level: 0.41 to 0.46 V  
(-5.5 to -4.5 dB)

4. After the adjustment, disconnect pattern.

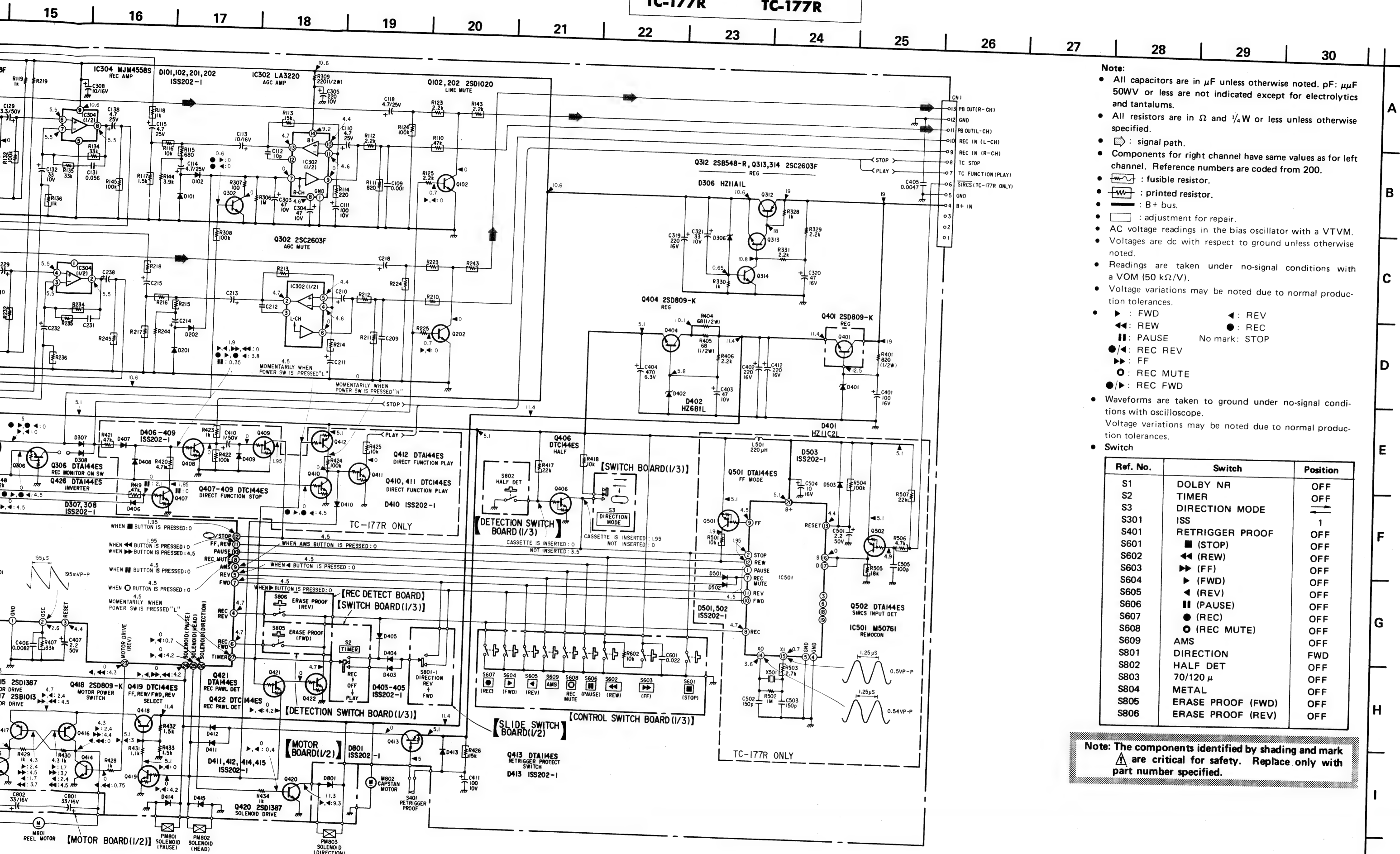




#### 4-1. SCHEMATIC DIAGRAM







- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50V or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
  - Signal path.
  - Components for right channel have same values as for left channel. Reference numbers are coded from 200.
  - Fusible resistor.
  - Printed resistor.
  - B+ bus.
  - Adjustment for repair.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Voltages are dc with respect to ground unless otherwise noted.
  - Readings are taken under no-signal conditions with a VOM (50  $\text{k}\Omega/\text{V}$ ).
  - Voltage variations may be noted due to normal production tolerances.
  - Waveforms are taken to ground under no-signal conditions with oscilloscope.
  - Voltage variations may be noted due to normal production tolerances.

Ref. No.	Switch	Position
S1	DOLBY NR	OFF
S2	TIMER	OFF
S3	DIRECTION MODE	→
S301	ISS	1
S401	RETRIGGER PROOF	OFF
S601	(STOP)	OFF
S602	(REW)	OFF
S603	(FF)	OFF
S604	(FWD)	OFF
S605	(REV)	OFF
S606	(PAUSE)	OFF
S607	(REC)	OFF
S608	(REC MUTE)	OFF
S609	AMS	OFF
S801	DIRECTION	FWD
S802	HALF DET	OFF
S803	70/120 $\mu$	OFF
S804	METAL	OFF
S805	ERASE PROOF (FWD)	OFF
S806	ERASE PROOF (REV)	OFF

**Note:** The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.



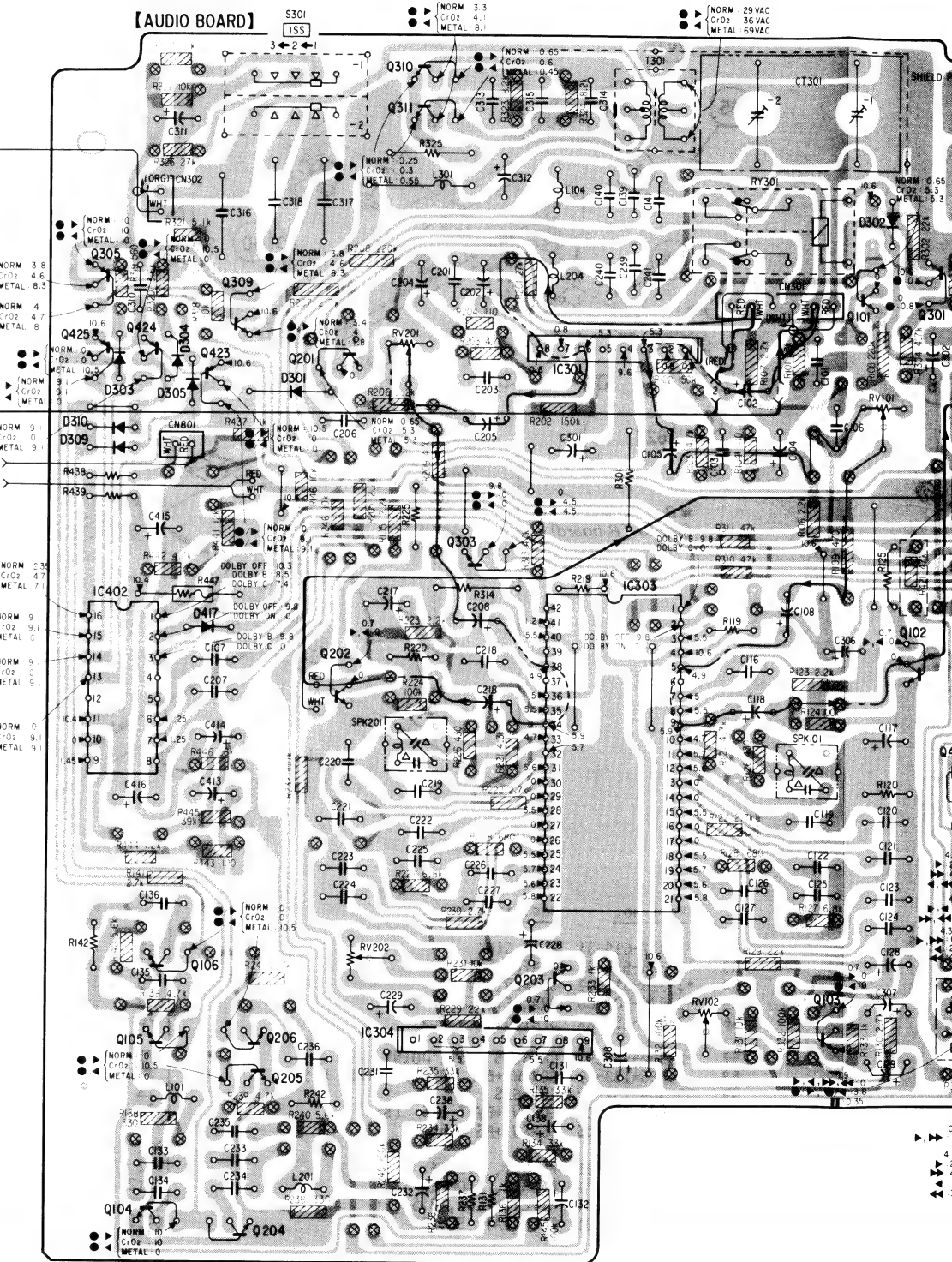
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

A diagram of a hand with a red mark on the palm. A label  $(RED)(GRY)$  points to the mark. The hand is shown in a simplified, schematic style.

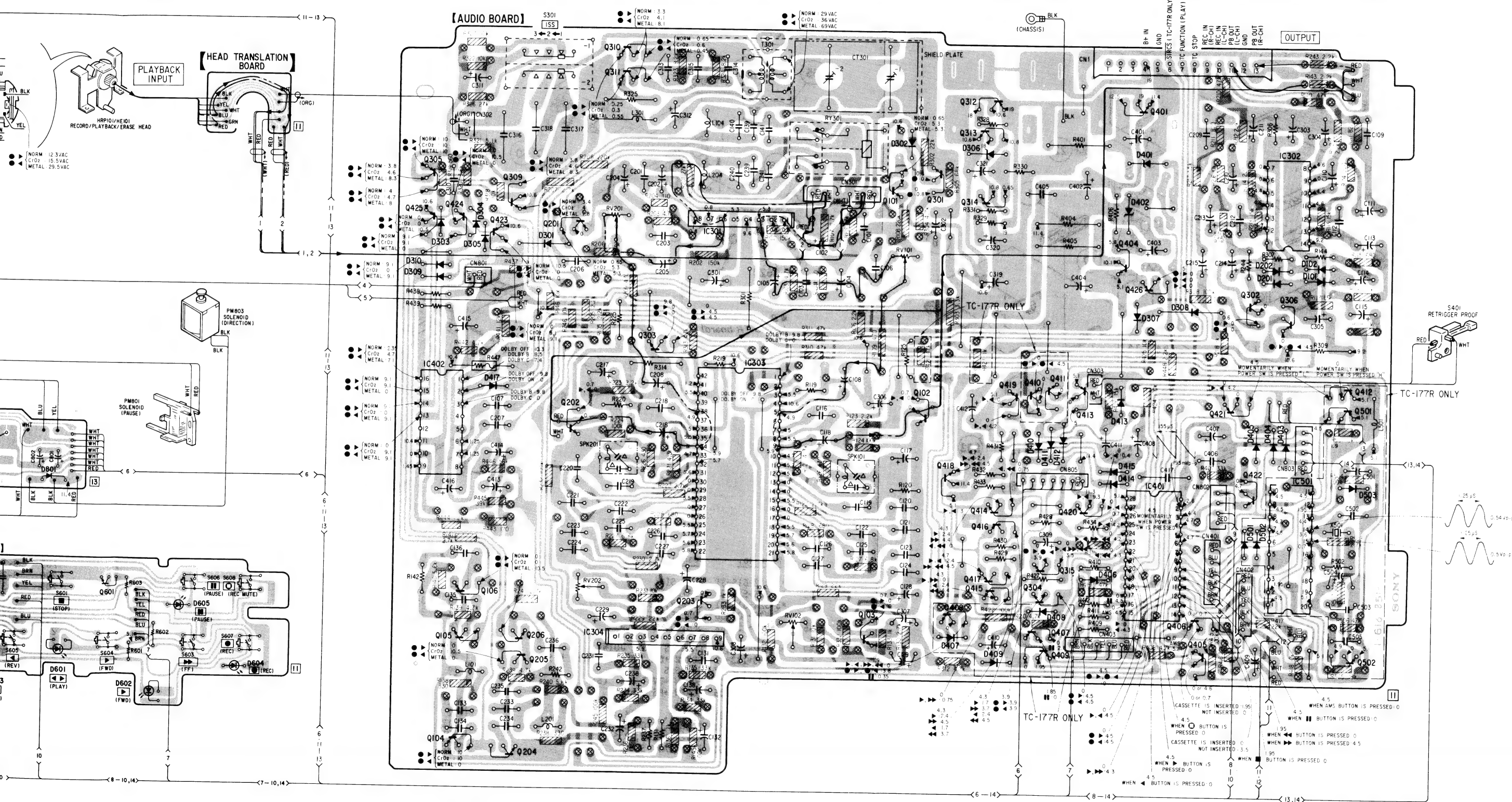
**B**

- |   |        |     |     |     |     |  |     |
|---|--------|-----|-----|-----|-----|--|-----|
| D | PH1401 |     |     | 801 |     |  |     |
|   |        | 606 |     | 601 | 605 |  | 604 |
|   |        |     | 603 |     | 602 |  |     |

D

[illegible]

Q IC	305 425	424	423	309	201	310 311	IC301	101	301	312 313 314	419 414 416	410	411	413	401	402 403	IC302	302	306	412 501		
	IC402	106 105		206 205 204		IC304	203	418		417 415	315 304 407 409	420		404	426	IC401	422	IC501	502			
D	310 309	303	304	305	301			103	408	302	306				402 401 311	307	312	308	202 201	102 101	405, 404, 403 501, 502	503






SECTION 5  
EXPLODED VIEWS AND PARTS LIST

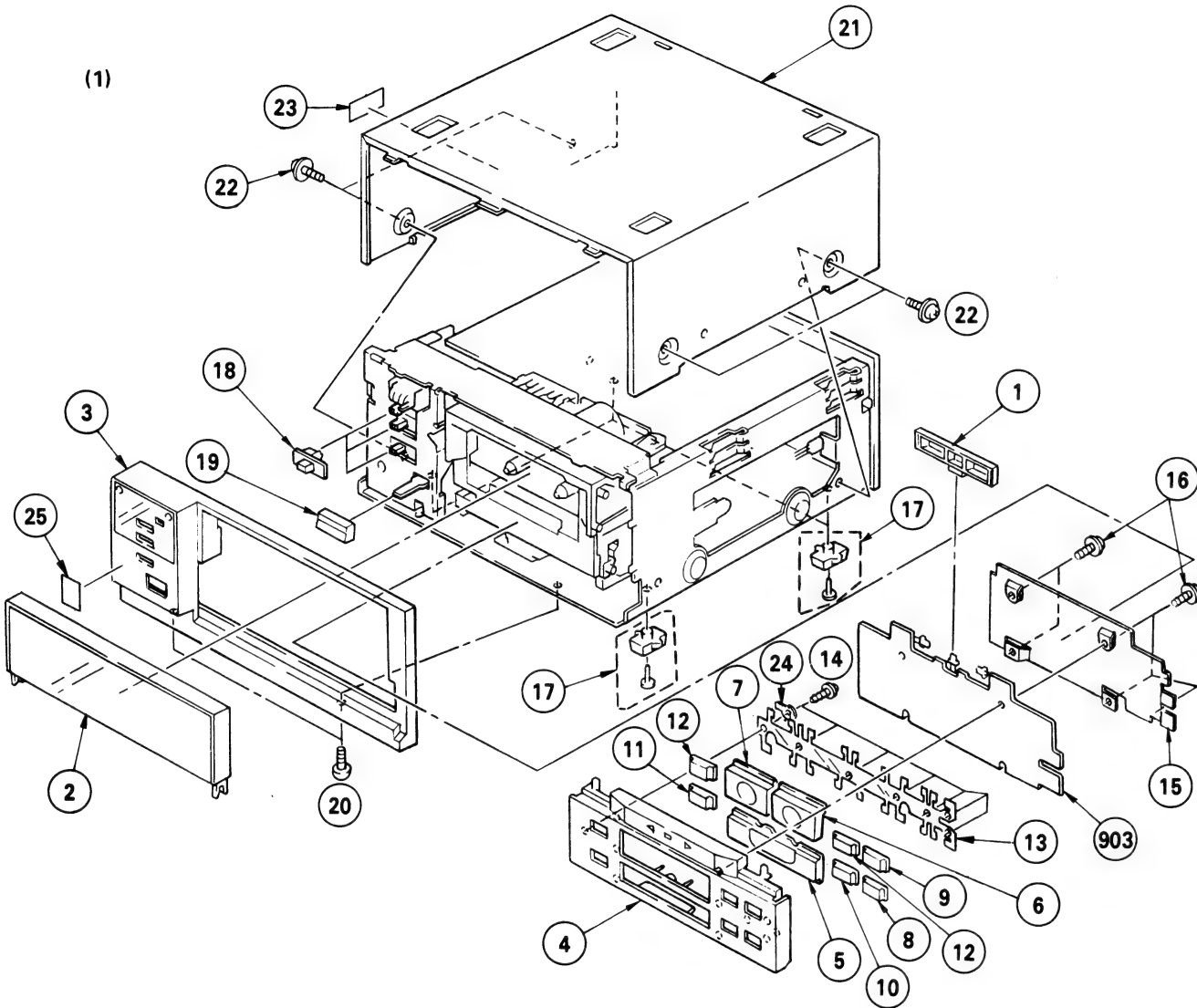
NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

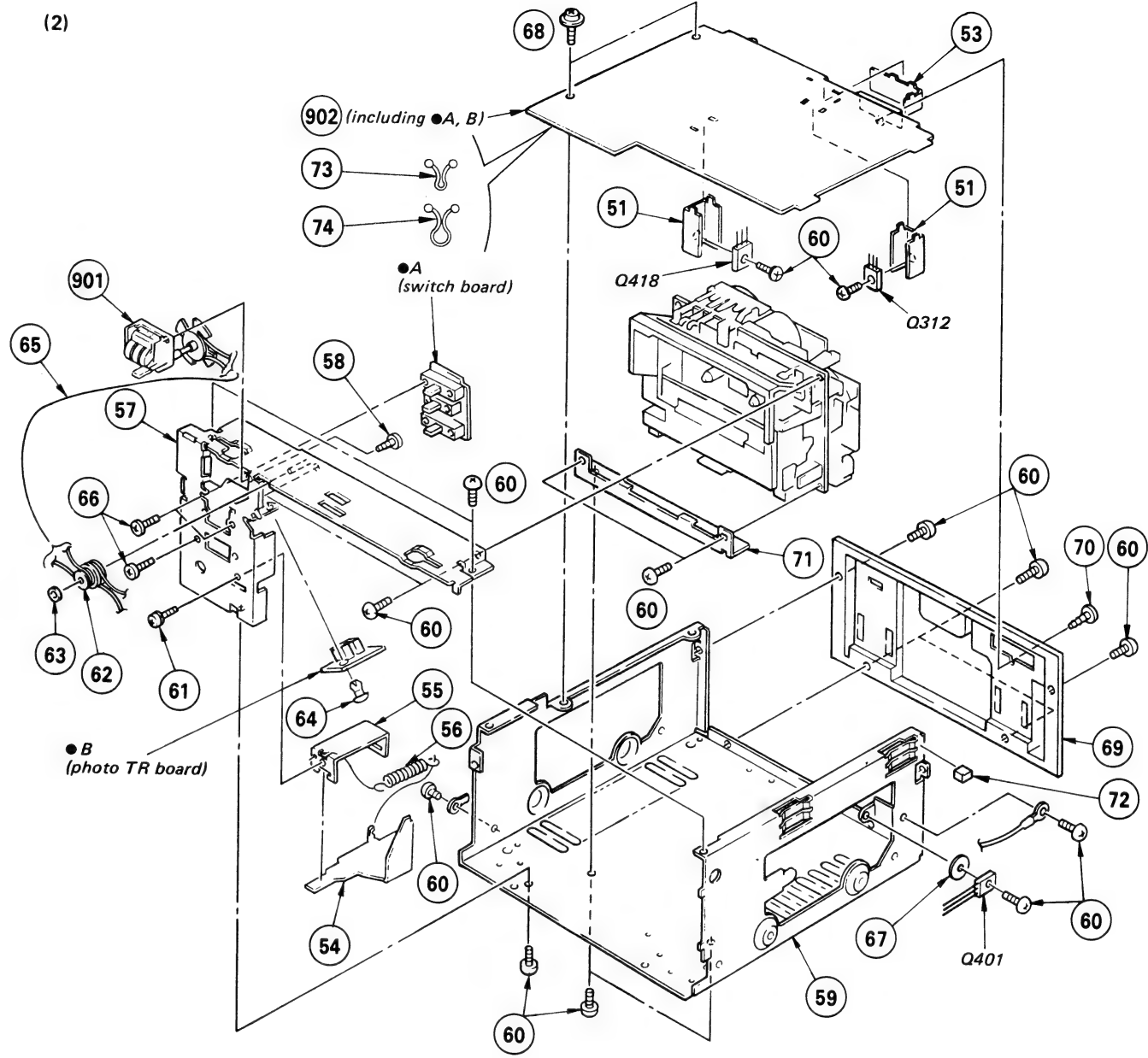
The construction parts of an assembled part are indicated with a collation number in the remark column.

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	*3-325-508-01	HOUSE, LED		13	3-325-512-01	SPRING	
2	X-3325-542-1 X-3325-543-1	(E model).....WINDOW ASSY, CASSETTE (EXCEPT FOR E model)..WINDOW ASSY, CASSETTE		14	7-687-202-11	TOTSU, TAPPING PTPWH 2X4	
3	X-3325-523-1	PANEL ASSY, FRONT		15	*3-325-511-01	PLATE, SHIELD	
4	X-3325-525-1	ESCUTCHEON ASSY		16	7-687-233-11	SCREW, TOTSU PTPWH 2.6X6, TYPE2	
5	3-325-506-01	BUTTON (B), STOP		17	X-4902-937-1	FOOT ASSY, RUBBER	
6	3-325-504-01	BUTTON (B), FWD		18	3-307-538-21	KNOB, SWITCH, TIMER	
7	3-325-505-01	BUTTON (B), REV		19	3-575-533-31	BUTTON, EJECT	
8	3-325-503-31	BUTTON (B), REC MUTE		20	7-685-871-01	SCREW +BVTT 3X6 (S)	
9	3-325-503-11	BUTTON, REC		21	4-910-078-31	CASE	
10	3-325-503-21	BUTTON (B), PAUSE		22	4-886-821-01	SCREW, M3 CASE	
11	3-325-503-41	BUTTON, AMS		23	*3-325-581-01	LABEL, MODEL NUMBER (W)	
12	3-325-503-01	BUTTON (B), FF.REW		24	7-623-505-01	LUG, 2	
				25	3-703-709-41	STICKER, SONY SYMBOL (15)	
				903	*1-615-390-11	PC BOARD, CONTROL SWITCH	



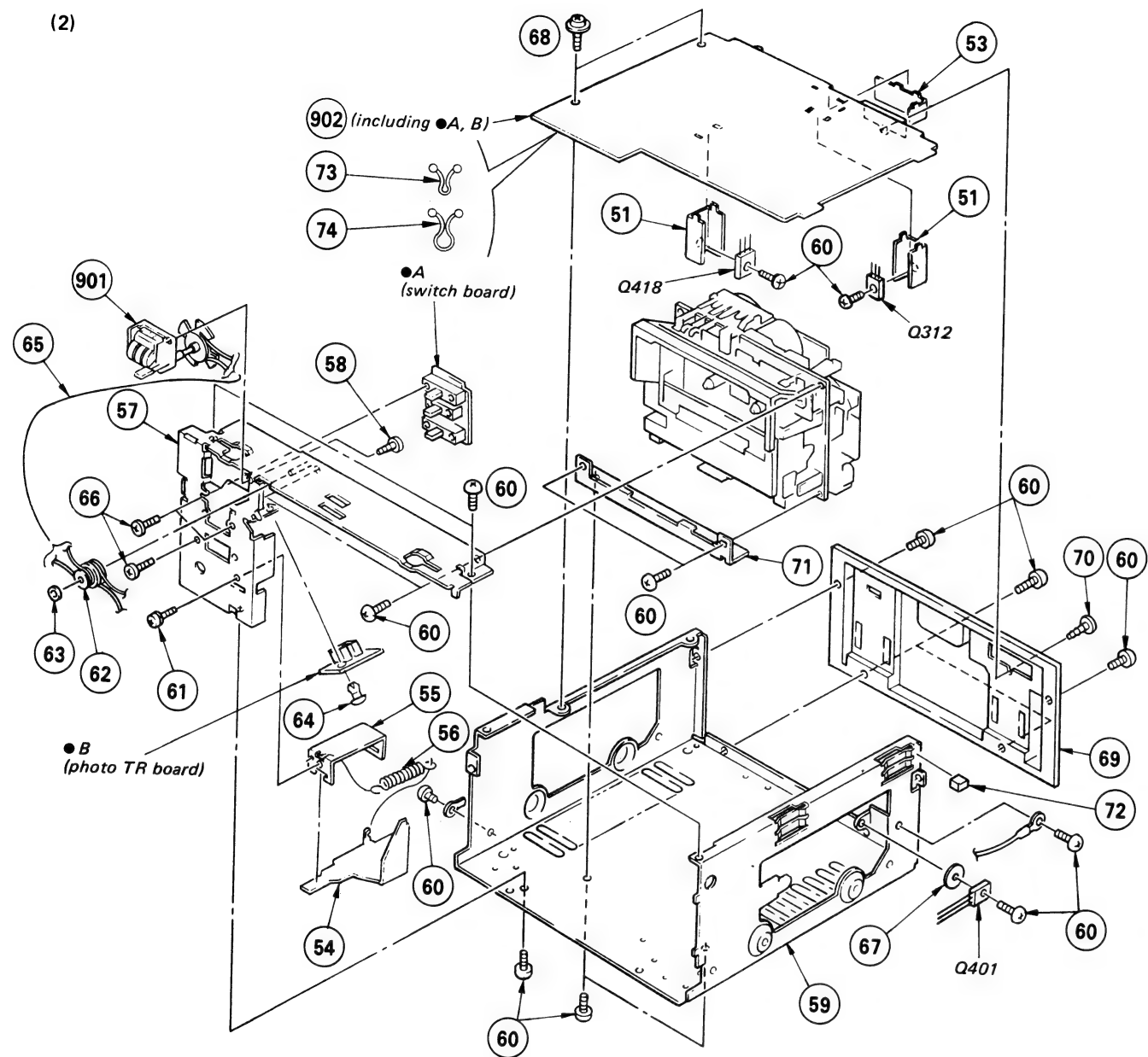
No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	*3-312-615-31	HEAT SINK		66	7-621-775-10	SCREW +B 2.6X4	
53	*3-325-515-01	PLATE, SHIELD		67	3-572-365-11	SHEET, INSULATING (A)	
54	*3-325-513-01	SLIDER, EJECT		68	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6	
55	*3-575-502-00	BRACKET, EJECT		69	3-309-129-71	PLATE, JACK	
56	3-534-238-XX	SPRING, TENSION		70	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S	
57	*X-3325-501-1	CHASSIS ASSY, JOINT		71	*3-319-722-01	BRACKET, MD	
58	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S		72	9-911-841-XX	CUSHION	
59	*3-309-132-12	CHASSIS		73	*2-056-665-00	HOLDER, WIRE (PURCE LOCK 5 DIA)	
60	7-685-871-01	SCREW +BVTT 3X6 (S)		74	*2-056-666-00	PURSE LOCK (8 DIA.)	
61	7-628-254-05	SCREW +PS 2.6X5		901	1-548-563-91	COUNTER, TAPE (MIDDLE TYPE)	
62	3-318-825-01	PULLEY, MIDWAY		902	*A-2056-296-A	MOUNTED PCB, AUDIO	
63	3-558-708-21	WASHER, STOPPER		Q312	8-729-154-82	TRANSISTOR 2SB548-R	
64	4-812-134-11	RIVET NYLON, 3.5		Q401	8-729-180-92	TRANSISTOR 2SD809-K	
65	3-325-509-01	BELT (A), SQUARE		Q418	8-729-180-92	TRANSISTOR 2SD809-K	



No.	Part No.	Description	Remarks
201	7-6		
202	3-5		
203	3-3		
204	3-3		
205	3-3		
206	3-3		
207	3-3		
208	3-3		
209	3-3		
210	3-3		
211	X-3		
212	3-3		
213	3-3		
214	3-5		
215	*3-3		
216	3-3		
217	3-3		
218	3-3		
219	3-3		
220	3-3		
221	3-3		
222	3-3		
223	*3-3		

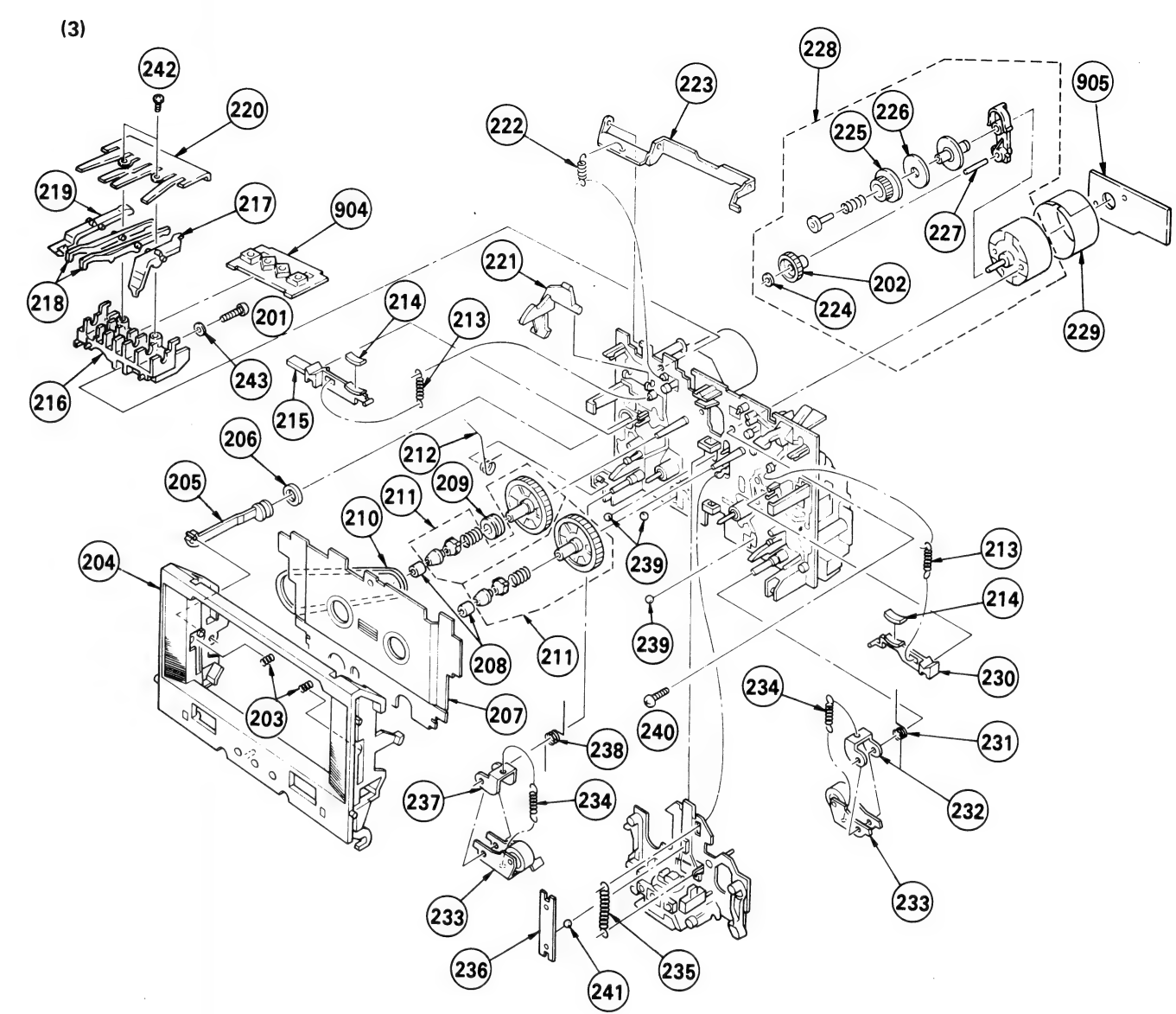


# FH-150R TC-177R FH-150R TC-177R



No.	Part No.	Description
51	*3-312-615-31	HEAT SINK
53	*3-325-515-01	PLATE, SHIELD
54	*3-325-513-01	SLIDER, EJECT
55	*3-575-502-00	BRACKET, EJECT
56	3-534-238-XX	SPRING, TENSION
57	*X-3325-501-1	CHASSIS ASSY, JOINT
58	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S
59	*3-309-132-12	CHASSIS
60	7-685-871-01	SCREW +BVTT 3X6 (S)
61	7-628-254-05	SCREW +PS 2.6X5
62	3-318-825-01	PULLEY, MIDWAY
63	3-558-708-21	WASHER, STOPPER
64	4-812-134-11	RIVET NYLON, 3.5
65	3-325-509-01	BELT (A), SQUARE

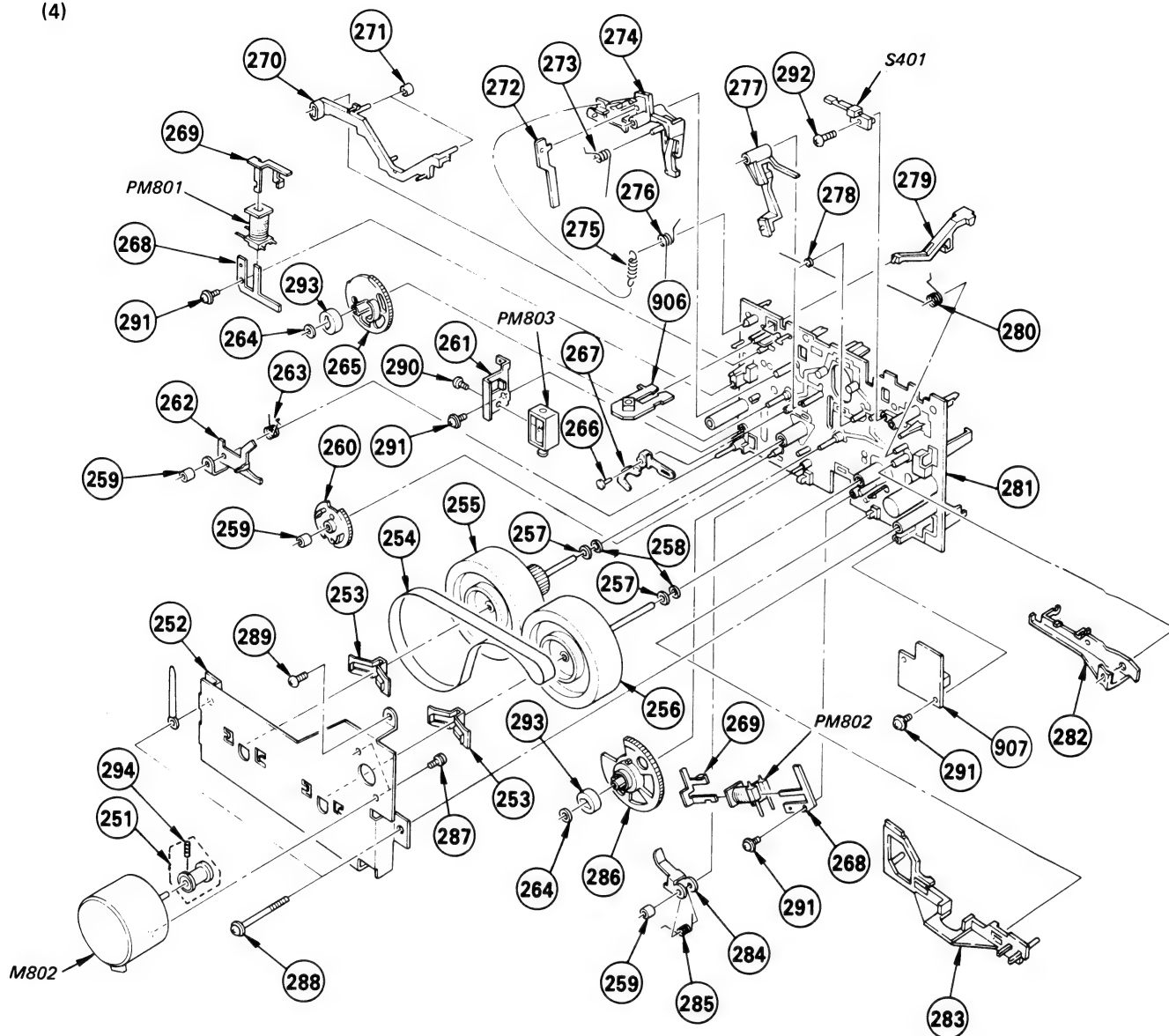
No.	Part No.	Description	Remarks
66	7-621-775-10	SCREW +B 2.6X4	
67	3-572-365-11	SHEET, INSULATING (A)	
68	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6	
69	3-309-129-71	PLATE, JACK	
70	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S	
71	*3-319-722-01	BRACKET, MD	
72	9-911-841-XX	CUSHION	
73	*2-056-665-00	HOLDER, WIRE (PURSE LOCK 5 DIA)	
74	*2-056-666-00	PURSE LOCK (8 DIA.)	
901	1-548-563-91	COUNTER, TAPE (MIDDLE TYPE)	
902	*A-2056-296-A	MOUNTED PCB, AUDIO	
Q312	8-729-154-82	TRANSISTOR 2SB548-R	
Q401	8-729-180-92	TRANSISTOR 2SD809-K	
Q418	8-729-180-92	TRANSISTOR 2SD809-K	



No.	Part No.	Description	Remarks
201	7-685-865-01	SCREW +BVTT 2.6X12 (S)	
202	3-575-332-00	GEAR, FR	
203	3-319-721-01	SPRING, COMPRESSION	
204	3-319-700-01	HOLDER, CASSETTE	
205	3-319-613-01	PISTON (B)	
206	3-312-441-00	RING, PISTON	
207	3-313-292-11	RETAINER, CASSETTE	
208	3-319-607-01	BUSHING, REEL TABLE	
209	3-319-657-01	PULLEY (B) CB	
210	3-325-510-01	BELT (B), SQUARE	
211	X-3319-617-1	PULLEY ASSY, MOTOR	
212	3-319-614-01	SPRING	
213	3-319-694-01	SPRING, TENSION	
214	3-575-346-01	FELT, BREKE	
215	*3-319-611-01	LEVER (LEFT), BACK TENSION	
216	3-319-670-01	HOLDER, SWITCH, DETECTION	
217	3-319-605-01	LEVER, METAL DETECTION	
218	3-319-603-01	LEVER, REC DETECTION	
219	3-319-604-01	LEVER, HALF DETECTION	
220	3-319-602-01	SPRING	
221	3-319-669-01	LEVER, EJECT	
222	3-312-432-00	SPRING, TENSION	
223	*3-319-678-01	LEVER, SWITCH LIFT	

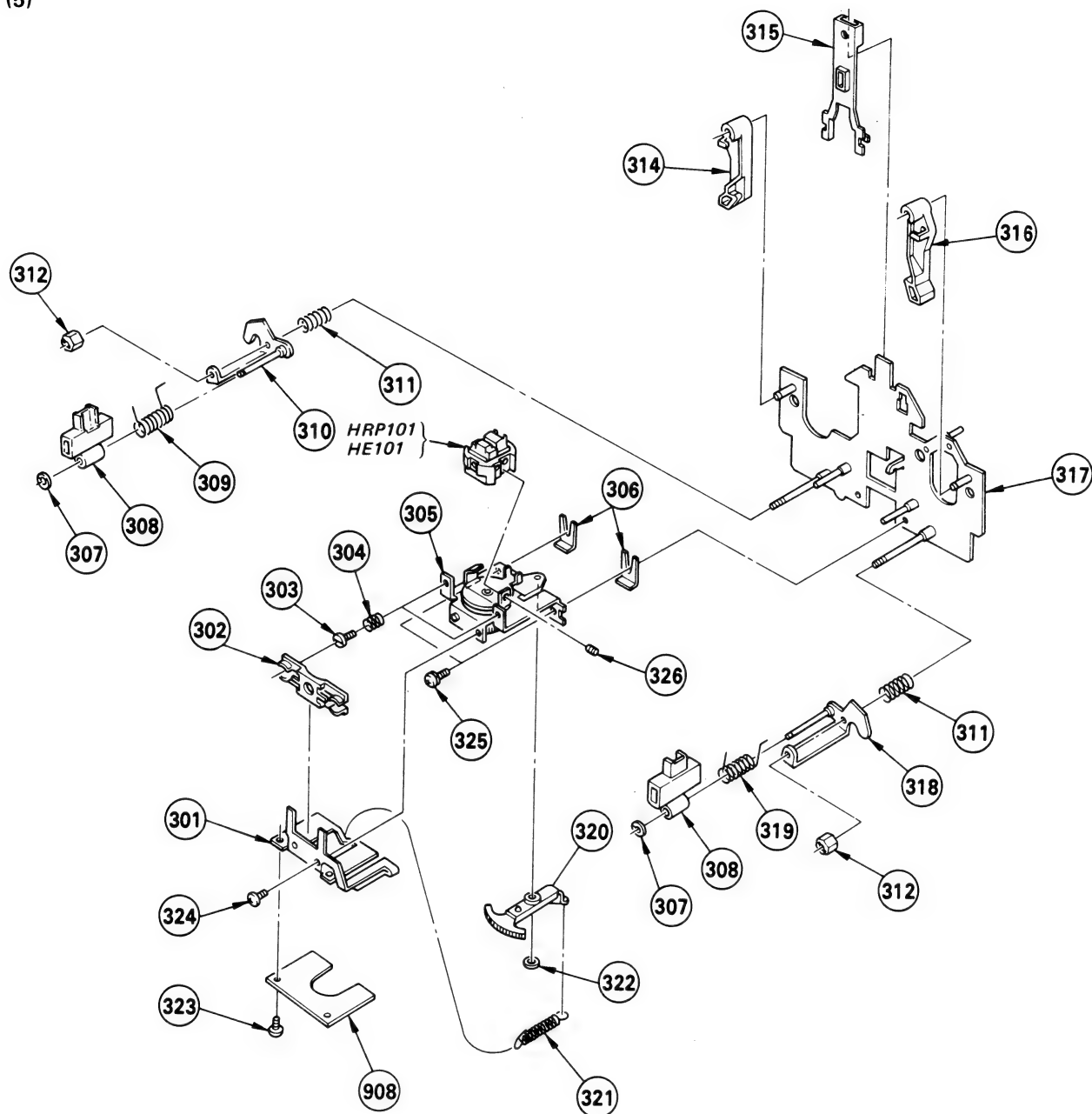
No.	Part No.	Description	Remarks
224	3-307-394-00	RETAINER (B), THRUST	
225	3-575-324-00	GEAR, LIMITER	
226	3-564-027-11	FELT, LIMITER	
227	3-575-304-00	SHAFT, GEAR, FR	
228	X-3319-612-1	MOTOR ASSY, REEL	202, 224-227
229	3-575-457-00	PLATE (B), SHIELD, MOTOR	
230	*3-319-615-01	LEVER (RIGHT), BACK TENSION	
231	3-319-650-01	SPRING (R)	
232	*3-319-652-01	PLATE (RIGHT), LIMITER	
233	X-3319-607-1	PINCH LEVER ASSY	
234	3-319-686-01	SPRING, TENSION	
235	3-319-685-01	SPRING, TENSION	
236	3-319-601-01	SPRING	
237	*3-319-653-01	PLATE (LEFT), LIMITER	
238	3-319-651-01	SPRING (L)	
239	7-671-112-01	STEEL, BALL	
240	7-621-775-60	SCREW +B 2.6X12	
241	7-671-112-11	BALL, STEEL	
242	7-685-102-21	SCREW +PTP 2.6X4 TYPE2 SLIT	
243	7-688-002-01	W 2.6, SMALL	
904	*1-614-696-11	PC BOARD, DETECTION SW	
905	*1-613-522-11	PC BOARD, TRANSLATION	

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No.	Part No.	Description	REMARKS	No.	Part No.	Description	REMARKS
251	X-3319-617-1	PULLEY ASSY, MOTOR		274	*X-3319-614-1	LEVER ASSY, PAUSE	
252	*3-319-665-01	RETAINER, THRUST	294	275	3-555-124-00	SPRING, TENSION	
253	3-319-608-01	RETAINER, THRUST		276	3-319-637-01	SPRING (R)	
254	3-319-630-01	BELT (R), CAPSTAN		277	*X-3319-615-1	LEVER ASSY, FWD LOCK	
255	X-3319-606-1	FLYWHEEL (T) ASSY		278	3-319-649-01	SPRING	
256	X-3319-601-1	FLYWHEEL ASSY		279	3-319-666-01	LEVER (RIGHT), REC DETECTION	
257	3-701-438-11	WASHER, 2.5		280	3-319-633-01	SPRING	
258	3-307-482-00	WASHER, LUMILER		281	X-3319-611-1	CHASSIS ASSY, MECHANICAL	
259	3-319-607-01	BUSHING, REEL TABLE		282	*3-319-676-01	LEVER, FWD	
260	3-319-674-01	GEAR, REVERSE CAM		283	*3-319-681-01	SLIDER, REVERSE	
261	*3-319-639-01	BRACKET, TRIGGER PM		284	*3-319-658-01	LEVER, TRIGGER KICK	
262	*3-319-628-01	LEVER, REVERSE TRIGGER		285	3-319-660-01	SPRING	
263	3-319-648-01	SPRING		286	3-319-689-01	GEAR, FWD CAM	
264	3-307-394-00	RETAINER (B), THRUST		287	7-628-253-95	SCREW +PS 2.6X4	
265	3-319-688-01	GEAR, PAUSE CAM		288	7-685-879-01	SCREW +BVTT 3X30 (S)	
266	*3-319-664-01	SHAFT, CONTROL LEVER		289	7-685-646-21	SCREW +BVTP 3X8 (S)	
267	*3-319-683-01	LEVER, CONTROL, TRIGGER		290	7-685-850-01	SCREW +BVTT 2X3 (S)	
268	3-307-332-00	ARBOR, FIXED		291	7-687-204-11	TOTSU PTPWH 2X6 NON-SLIT, TYPE2	
269	3-307-333-00	ARBOR, TRIGGER		292	7-685-792-01	SCREW +PTT 2.6X5	
270	*3-319-668-01	PLATE, BRAKE		293	1-452-202-00	MAGNET	
271	3-319-662-01	RUBBER, BRAKE		294	7-621-733-08	SET-SCT, HEX 2X4 FLAT POINT	
272	3-319-612-01	SPRING		906	*1-612-727-11	PC BOARD, REC DET	
273	3-319-606-01	SPRING		907	*1-614-396-11	PC BOARD, SLIDE SW	

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No.	Part No.	Description
301	3-319-620-01	PLATE, ORNAMENTAL, HEAD
302	3-319-644-01	STOPPER
303	3-319-663-01	SCREW, ADJUSTMENT, AZIMUTH
304	3-307-460-00	SPRING, COMPRESSION
305	X-3319-613-1	BRACKET COMPLETE ASSY, HEAD
306	3-307-477-01	SEAM (A), HEAD ADJUSTMENT
	3-307-477-11	SEAM (A), HEAD ADJUSTMENT
	3-307-477-21	SEAM (A), HEAD ADJUSTMENT
	3-307-477-31	SEAM (A), HEAD ADJUSTMENT
	3-307-477-41	SEAM (A), HEAD ADJUSTMENT
307	3-307-394-00	RETAINER (B), THRUST
308	3-306-269-01	GUIDE, TAPE
309	3-306-249-00	SPRING (LEFT)
310	*X-3319-609-1	LEVER (LEFT) ASSY, GUIDE
311	3-537-215-00	SPRING, COMPRESSION

REMARKS

No.	Part No.	Description
312	3-319-638-01	NUT, ADJUSTMENT
314	3-319-643-01	LEVER (L), P ROLLER SELECTION
315	3-319-684-01	PROTECTOR, EDGE
316	3-319-642-01	LEVER (R), P ROLLER SELECTION
317	*X-3319-610-1	CHASSIS ASSY, REVERSE HEAD
318	*X-3319-608-1	LEVER (RIGHT) ASSY, GUIDE
319	3-306-250-00	SPRING (RIGHT)
320	3-319-625-01	GEAR, ROTARY HEAD
321	3-306-258-01	SPRING, TENSION
322	7-624-102-04	STOP RING 1.5
323	7-685-850-01	SCREW +BVTT 2X3 (S)
324	7-627-553-17	SCREW, PRECISION +P 2X2
325	7-628-253-05	SCREW +PS 2X4
326	7-621-710-26	SET-SCREW, SLOT 2X3 FLAT POINT
908	*1-612-729-11	PC BOARD, HEAD TRANSLATION

REMARKS



## SECTION 6

### ELECTRICAL PARTS LIST

**NOTE:**

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**

MF:μF, PF:μμF.

**RESISTORS**

- All resistors are in ohms.
- F : nonflammable

**COILS**

· MMH : mH, UH : μH

**SEMICONDUCTORS**

In each case, U : μ, for example:

UA....: μA..., UPA....: μPA..., UPC....: μPC,

UPD....: μPD...

The components identified by shading and mark are critical for safety. Replace only with part number specified.

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
901	1-548-563-91	COUNTER, TAPE (MIDDLE TYPE)			
902	*A-2056-296-A	MOUNTED PCB, AUDIO			
903	*1-615-390-11	PC BOARD, CONTROL SWITCH			
904	*1-614-696-11	PC BOARD, DETECTION SW			
905	*1-613-522-11	PC BOARD, TRANSLATION			
906	*1-612-727-11	PC BOARD, REC DET			
907	*1-614-396-11	PC BOARD, SLIDE SW			
908	*1-612-729-11	PC BOARD, HEAD TRANSLATION			
C101	1-162-293-31	CERAMIC	820PF	10%	50V
C102	1-123-384-00	ELECT	10MF	20%	50V
C103	1-136-157-00	FILM	0.022MF	5%	50V
C104	1-123-307-00	ELECT	100MF	20%	10V
C105	1-123-613-00	ELECT	3.3MF	20%	50V
C106	1-136-157-00	FILM	0.022MF	5%	50V
C107	1-136-158-00	FILM	0.027MF	5%	50V
C108	1-123-369-00	ELECT	4.7MF	20%	25V
C109	1-162-294-31	CERAMIC	0.001MF	10%	50V
C110	1-123-369-00	ELECT	4.7MF	20%	25V
C111	1-123-328-00	ELECT	100MF	20%	10V
C112	1-162-199-31	CERAMIC	10PF	5%	50V
C113	1-123-356-00	ELECT	10MF	20%	16V
C114	1-123-369-00	ELECT	4.7MF	20%	25V
C115	1-123-369-00	ELECT	4.7MF	20%	25V
C116	1-110-201-00	MYLAR	0.0033MF	5%	50V
C117	1-123-298-00	ELECT	470MF	20%	6.3V
C118	1-123-369-00	ELECT	4.7MF	20%	25V
C119	1-110-203-00	MYLAR	0.0047MF	5%	50V
C120	1-136-173-00	FILM	0.47MF	5%	50V
C121	1-136-167-00	FILM	0.15MF	5%	50V
C122	1-136-155-00	FILM	0.015MF	5%	50V
C123	1-136-169-00	FILM	0.22MF	5%	50V
C124	1-136-163-00	FILM	0.068MF	5%	50V
C125	1-136-161-00	FILM	0.047MF	5%	50V
C126	1-110-205-00	MYLAR	0.0068MF	5%	50V
C127	1-136-153-00	FILM	0.01MF	5%	50V
C128	1-123-369-00	ELECT	4.7MF	20%	25V
C129	1-123-382-00	ELECT	3.3MF	20%	50V
C131	1-136-162-00	FILM	0.056MF	5%	50V
C132	1-123-318-00	ELECT	33MF	20%	10V
C133	1-136-153-00	FILM	0.01MF	5%	50V
C134	1-110-200-00	MYLAR	0.0027MF	5%	50V
C135	1-136-157-00	FILM	0.022MF	5%	50V
C136	1-110-205-00	MYLAR	0.0068MF	5%	50V
C138	1-123-369-00	ELECT	4.7MF	20%	25V
C140	1-136-272-00	FILM	68PF	5%	630V
C141	1-136-271-00	FILM	56PF	5%	630V
C201	1-162-293-31	CERAMIC	820PF	10%	50V

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
C202	1-123-384-00	ELECT	10MF	20%	50V
C203	1-136-157-00	FILM	0.022MF	5%	50V
C204	1-123-307-00	ELECT	100MF	20%	10V
C205	1-123-613-00	ELECT	3.3MF	20%	50V
C206	1-136-157-00	FILM	0.022MF	5%	50V
C207	1-136-158-00	FILM	0.027MF	5%	50V
C208	1-123-369-00	ELECT	4.7MF	20%	25V
C209	1-162-294-31	CERAMIC	0.001MF	10%	50V
C210	1-123-369-00	ELECT	4.7MF	20%	25V
C211	1-123-307-00	ELECT	100MF	20%	10V
C212	1-162-199-31	CERAMIC	10PF	5%	50V
C213	1-123-356-00	ELECT	10MF	20%	16V
C214	1-123-369-00	ELECT	4.7MF	20%	25V
C215	1-123-369-00	ELECT	4.7MF	20%	25V
C216	1-110-201-00	MYLAR	0.0033MF	5%	50V
C217	1-123-298-00	ELECT	470MF	20%	6.3V
C218	1-123-369-00	ELECT	4.7MF	20%	25V
C219	1-110-203-00	MYLAR	0.0047MF	5%	50V
C220	1-136-173-00	FILM	0.47MF	5%	50V
C221	1-136-167-00	FILM	0.15MF	5%	50V
C222	1-136-155-00	FILM	0.015MF	5%	50V
C223	1-136-169-00	FILM	0.22MF	5%	50V
C224	1-136-163-00	FILM	0.068MF	5%	50V
C225	1-136-161-00	FILM	0.047MF	5%	50V
C226	1-110-205-00	MYLAR	0.0068MF	5%	50V
C227	1-136-153-00	FILM	0.01MF	5%	50V
C228	1-123-369-00	ELECT	4.7MF	20%	25V
C229	1-123-382-00	ELECT	3.3MF	20%	50V
C231	1-136-162-00	FILM	0.056MF	5%	50V
C232	1-123-318-00	ELECT	33MF	20%	10V
C233	1-136-153-00	FILM	0.01MF	5%	50V
C234	1-110-200-00	MYLAR	0.0027MF	5%	50V
C235	1-136-157-00	FILM	0.022MF	5%	50V
C236	1-110-205-00	MYLAR	0.0068MF	5%	50V
C238	1-123-369-00	ELECT	4.7MF	20%	25V
C240	1-136-272-00	FILM	68PF	5%	630V
C241	1-136-271-00	FILM	56PF	5%	630V
C301	1-123-308-00	ELECT	220MF	20%	10V
C302	1-123-382-00	ELECT	3.3MF	20%	50V
C303	1-123-306-00	ELECT	47MF	20%	10V
C304	1-123-306-00	ELECT	47MF	20%	10V
C305	1-123-308-00	ELECT	220MF	20%	10V
C306	1-123-321-00	ELECT	220MF	20%	16V
C307	1-123-381-00	ELECT	2.2MF	20%	50V
C308	1-123-356-00	ELECT	10MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C309	1-123-356-00	ELECT	10MF	20%	16V
C311	1-123-379-00	ELECT	0.47MF	20%	50V
C312	1-123-356-00	ELECT	10MF	20%	16V
C313	1-130-289-00	FILM	0.0047MF	5%	100V
C314	1-130-289-00	FILM	0.0047MF	5%	100V
C315	1-130-295-00	FILM	0.0082MF	5%	100V
C316	1-129-713-00	FILM	0.0082MF	10%	630V
C317	1-129-898-00	FILM	0.0022MF	10%	630V
C318	1-129-705-00	FILM	0.0018MF	10%	630V
C319	1-123-321-00	ELECT	220MF	20%	16V
C320	1-123-332-00	ELECT	47MF	20%	16V
C321	1-123-318-00	ELECT	33MF	20%	10V
C401	1-123-333-00	ELECT	100MF	20%	16V
C402	1-123-321-00	ELECT	220MF	20%	16V
C403	1-123-306-00	ELECT	47MF	20%	10V
C404	1-123-298-00	ELECT	470MF	20%	6.3V
C405	1-162-304-31	CERAMIC	0.0047MF	20%	16V
C406	1-110-206-00	MYLAR	0.0082MF	5%	50V
C407	1-123-381-00	ELECT	2.2MF	20%	50V
C408	1-123-356-00	ELECT	10MF	20%	16V
C409	1-123-611-00	ELECT	1MF	20%	50V
C410	1-123-380-00	ELECT	1MF	20%	50V
C411	1-123-307-00	ELECT	100MF	20%	10V
C412	1-123-321-00	ELECT	220MF	20%	16V
C413	1-123-380-00	ELECT	1MF	20%	50V
C414	1-123-380-00	ELECT	1MF	20%	50V
C415	1-123-308-00	ELECT	220MF	20%	10V
C416	1-123-381-00	ELECT	2.2MF	20%	50V
C417	1-161-494-00	CERAMIC	0.022MF	30%	25V
C501	1-123-381-00	ELECT	2.2MF	20%	50V
C502	1-162-284-31	CERAMIC	150PF	10%	50V
C503	1-162-284-31	CERAMIC	150PF	10%	50V
C504	1-123-356-00	ELECT	10MF	20%	16V
C505	1-162-282-31	CERAMIC	100PF	10%	50V
C601	1-161-494-00	CERAMIC	0.022MF	30%	25V
CN1	1-562-068-13	SOCKET, CONNECTOR 13P			
CN301	*1-564-509-11	PLUG, CONNECTOR 6P			
CN302	*1-564-505-11	PLUG, CONNECTOR 2P			
CN303	*1-564-505-11	PLUG, CONNECTOR 2P			
CN401	*1-564-508-11	PLUG, CONNECTOR 5P			
CN402	*1-564-508-11	PLUG, CONNECTOR 5P			
CN403	*1-564-508-11	PLUG, CONNECTOR 5P			
CN801	*1-564-336-00	PIN, CONNECTOR 2P			
CN802	*1-564-338-00	PIN, CONNECTOR 4P			
CN803	*1-564-339-00	PIN, CONNECTOR 5P			
CN805	*1-564-341-11	PIN, CONNECTOR 7P			
CT301	1-141-225-00	CAP, TUNING, TRIMAR			
D101	8-719-107-94	DIODE 1SS202-1			
D102	8-719-107-94	DIODE 1SS202-1			
D201	8-719-107-94	DIODE 1SS202-1			
D202	8-719-107-94	DIODE 1SS202-1			
D301	8-719-107-94	DIODE 1SS202-1			
D302	8-719-107-94	DIODE 1SS202-1			
D303	8-719-107-94	DIODE 1SS202-1			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D304	8-719-107-94	DIODE 1SS202-1
D305	8-719-107-94	DIODE 1SS202-1
D306	8-719-910-11	DIODE HZ11A1L
D307	8-719-107-94	DIODE 1SS202-1
D308	8-719-107-94	DIODE 1SS202-1
D309	8-719-107-94	DIODE 1SS202-1
D310	8-719-107-94	DIODE 1SS202-1
D401	8-719-910-18	DIODE HZ11C2L
D402	8-719-910-64	DIODE HZ6B1L
D403	8-719-107-94	DIODE 1SS202-1
D404	8-719-107-94	DIODE 1SS202-1
D405	8-719-107-94	DIODE 1SS202-1
D406	8-719-107-94	DIODE 1SS202-1
D407	8-719-107-94	DIODE 1SS202-1
D408	8-719-107-94	DIODE 1SS202-1
D409	8-719-107-94	DIODE 1SS202-1
D410	8-719-107-94	DIODE 1SS202-1
D411	8-719-107-94	DIODE 1SS202-1
D412	8-719-107-94	DIODE 1SS202-1
D413	8-719-107-94	DIODE 1SS202-1
D414	8-719-107-94	DIODE 1SS202-1
D415	8-719-107-94	DIODE 1SS202-1
D417	8-719-107-94	DIODE 1SS202-1
D501	8-719-107-94	DIODE 1SS202-1
D502	8-719-107-94	DIODE 1SS202-1
D503	8-719-107-94	DIODE 1SS202-1
D601	8-719-920-03	DIODE GL-8PG1
D602	8-719-920-03	DIODE GL-8PG1
D603	8-719-920-03	DIODE GL-8PG1
D604	8-719-918-65	DIODE GL-1PR102
D605	8-719-918-66	DIODE GL-1HY102
D606	8-719-918-67	DIODE GL-1EG102
D801	8-719-107-94	DIODE 1SS202-1
HE101	X-3319-616-1	HEAD UNIT ASSY
HRP101	X-3319-616-1	HEAD UNIT ASSY
IC301	8-759-800-36	IC LA3160
IC302	8-759-800-92	IC LA3220
IC303	8-752-018-70	IC CX20187
IC304	8-759-700-08	IC NJM4558S
IC401	8-759-204-31	IC TC9312N-001
IC402	8-759-700-46	IC CX10034
IC501	8-759-602-47	IC M50761-417P
L101	1-408-923-00	MICRO INDUCTOR 8.2MMH
L104	1-408-930-00	MICRO INDUCTOR 33MMH
L201	1-408-923-00	MICRO INDUCTOR 8.2MMH
L204	1-408-930-00	MICRO INDUCTOR 33MMH
L301	1-408-096-00	MICRO INDUCTOR 470UH
L501	1-408-579-00	MICRO INDUCTOR 220UH
M802	1-541-239-00	MOTOR (CAPSTAIN)
PHI401	8-719-902-90	PHOTO INTERRUPTOR SPI201-20
Q101	8-729-900-89	TRANSISTOR DTC144ES
Q102	8-729-102-03	TRANSISTOR 2SD1020
Q103	8-729-606-33	TRANSISTOR 2SC2603F

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
Q104	8-729-900-89	TRANSISTOR DTC144ES			
Q105	8-729-900-89	TRANSISTOR DTC144ES			
Q106	8-729-900-89	TRANSISTOR DTC144ES			
Q201	8-729-900-89	TRANSISTOR DTC144ES			
Q202	8-729-102-03	TRANSISTOR 2SD1020			
Q203	8-729-606-33	TRANSISTOR 2SC2603F			
Q204	8-729-900-89	TRANSISTOR DTC144ES			
Q205	8-729-900-89	TRANSISTOR DTC144ES			
Q206	8-729-900-89	TRANSISTOR DTC144ES			
Q301	8-729-606-33	TRANSISTOR 2SC2603F			
Q302	8-729-606-33	TRANSISTOR 2SC2603F			
Q303	8-729-900-89	TRANSISTOR DTC144ES			
Q304	8-729-900-89	TRANSISTOR DTC144ES			
Q305	8-729-117-54	TRANSISTOR 2SA1175			
Q306	8-729-900-65	TRANSISTOR DTA144ES			
Q309	8-729-801-93	TRANSISTOR 2SD1387			
Q310	8-729-606-33	TRANSISTOR 2SC2603F			
Q311	8-729-606-33	TRANSISTOR 2SC2603F			
Q312	8-729-154-82	TRANSISTOR 2SB548-R			
Q313	8-729-606-33	TRANSISTOR 2SC2603F			
Q314	8-729-606-33	TRANSISTOR 2SC2603F			
Q315	8-729-900-89	TRANSISTOR DTC144ES			
Q401	8-729-180-92	TRANSISTOR 2SD809-K			
Q404	8-729-180-92	TRANSISTOR 2SD809-K			
Q405	8-729-117-54	TRANSISTOR 2SA1175			
Q406	8-729-900-89	TRANSISTOR DTC144ES			
Q407	8-729-900-89	TRANSISTOR DTC144ES			
Q408	8-729-900-89	TRANSISTOR DTC144ES			
Q409	8-729-900-89	TRANSISTOR DTC144ES			
Q410	8-729-900-89	TRANSISTOR DTC144ES			
Q411	8-729-900-89	TRANSISTOR DTC144ES			
Q412	8-729-900-65	TRANSISTOR DTA144ES			
Q413	8-729-900-80	TRANSISTOR DTA114ES			
Q414	8-729-801-93	TRANSISTOR 2SD1387			
Q415	8-729-801-93	TRANSISTOR 2SD1387			
Q416	8-729-801-83	TRANSISTOR 2SB1013			
Q417	8-729-801-83	TRANSISTOR 2SB1013			
Q418	8-729-180-92	TRANSISTOR 2SD809-K			
Q419	8-729-900-89	TRANSISTOR DTC144ES			
Q420	8-729-801-93	TRANSISTOR 2SD1387			
Q421	8-729-900-65	TRANSISTOR DTA144ES			
Q422	8-729-900-89	TRANSISTOR DTC144ES			
Q423	8-729-900-65	TRANSISTOR DTA144ES			
Q424	8-729-900-65	TRANSISTOR DTA144ES			
Q425	8-729-900-65	TRANSISTOR DTA144ES			
Q426	8-729-900-65	TRANSISTOR DTA144ES			
Q501	8-729-900-65	TRANSISTOR DTA144ES			
Q502	8-729-900-65	TRANSISTOR DTA144ES			
Q601	8-729-606-33	TRANSISTOR 2SC2603F			
R101	1-249-434-11	CARBON	27K	5%	1/6W
R102	1-247-883-00	CARBON	150K	5%	1/6W
R103	1-249-425-11	CARBON	4.7K	5%	1/6W
R104	1-247-808-00	CARBON	110	5%	1/6W
R105	1-249-421-11	CARBON	2.2K	5%	1/6W
R106	1-249-421-11	CARBON	2.2K	5%	1/6W
R107	1-247-841-00	CARBON	2.7K	5%	1/6W
R108	1-247-887-00	CARBON	220K	5%	1/6W
R109	1-247-823-00	CARBON	470	5%	1/6W

**ELECTRICAL PARTS**

Ref.No.	Part No.	Description			
R110	1-249-437-11	CARBON	47K	5%	1/6W
R111	1-247-829-00	CARBON	820	5%	1/6W
R112	1-249-421-11	CARBON	2.2K	5%	1/6W
R113	1-247-859-00	CARBON	15K	5%	1/6W
R114	1-247-815-00	CARBON	220	5%	1/6W
R115	1-247-827-00	CARBON	680	5%	1/6W
R116	1-249-429-11	CARBON	10K	5%	1/6W
R117	1-249-419-11	CARBON	1.5K	5%	1/6W
R118	1-247-831-00	CARBON	1K	5%	1/6W
R119	1-247-831-00	CARBON	1K	5%	1/6W
R120	1-247-831-00	CARBON	1K	5%	1/6W
R121	1-247-846-00	CARBON	4.3K	5%	1/6W
R122	1-247-841-00	CARBON	2.7K	5%	1/6W
R123	1-249-421-11	CARBON	2.2K	5%	1/6W
R124	1-247-879-00	CARBON	100K	5%	1/6W
R125	1-249-421-11	CARBON	2.2K	5%	1/6W
R126	1-247-822-00	CARBON	430	5%	1/6W
R127	1-247-851-00	CARBON	6.8K	5%	1/6W
R128	1-247-827-00	CARBON	680	5%	1/6W
R129	1-249-433-11	CARBON	22K	5%	1/6W
R130	1-247-841-00	CARBON	2.7K	5%	1/6W
R131	1-249-429-11	CARBON	10K	5%	1/6W
R132	1-247-879-00	CARBON	100K	5%	1/6W
R133	1-247-831-00	CARBON	1K	5%	1/6W
R134	1-247-867-00	CARBON	33K	5%	1/6W
R135	1-247-867-00	CARBON	33K	5%	1/6W
R136	1-247-831-00	CARBON	1K	5%	1/6W
R138	1-247-819-00	CARBON	330	5%	1/6W
R139	1-249-425-11	CARBON	4.7K	5%	1/6W
R140	1-247-849-00	CARBON	5.6K	5%	1/6W
R141	1-247-841-00	CARBON	2.7K	5%	1/6W
R142	1-247-845-00	CARBON	3.9K	5%	1/6W
R143	1-249-421-11	CARBON	2.2K	5%	1/6W
R144	1-247-845-00	CARBON	3.9K	5%	1/6W
R145	1-247-879-00	CARBON	100K	5%	1/6W
R146	1-249-429-11	CARBON	10K	5%	1/6W
R201	1-249-434-11	CARBON	27K	5%	1/6W
R202	1-247-883-00	CARBON	150K	5%	1/6W
R203	1-249-425-11	CARBON	4.7K	5%	1/6W
R204	1-247-808-00	CARBON	110	5%	1/6W
R205	1-249-421-11	CARBON	2.2K	5%	1/6W
R206	1-249-421-11	CARBON	2.2K	5%	1/6W
R207	1-247-841-00	CARBON	2.7K	5%	1/6W
R208	1-247-887-00	CARBON	220K	5%	1/6W
R209	1-247-823-00	CARBON	470	5%	1/6W
R210	1-249-437-11	CARBON	47K	5%	1/6W
R211	1-247-829-00	CARBON	820	5%	1/6W
R212	1-249-421-11	CARBON	2.2K	5%	1/6W
R213	1-247-859-00	CARBON	15K	5%	1/6W
R214	1-247-815-00	CARBON	220	5%	1/6W
R215	1-247-827-00	CARBON	680	5%	1/6W
R216	1-249-429-11	CARBON	10K	5%	1/6W
R217	1-249-419-11	CARBON	1.5K	5%	1/6W
R218	1-247-831-00	CARBON	1K	5%	1/6W
R219	1-247-831-00	CARBON	1K	5%	1/6W
R220	1-247-831-00	CARBON	1K	5%	1/6W
R221	1-247-846-00	CARBON	4.3K	5%	1/6W



### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R222	1-247-841-00	CARBON	2.7K	5%	1/6W
R223	1-249-421-11	CARBON	2.2K	5%	1/6W
R224	1-247-879-00	CARBON	100K	5%	1/6W
R225	1-249-421-11	CARBON	2.2K	5%	1/6W
R226	1-247-822-00	CARBON	430	5%	1/6W
R227	1-247-851-00	CARBON	6.8K	5%	1/6W
R228	1-247-827-00	CARBON	680	5%	1/6W
R229	1-249-433-11	CARBON	22K	5%	1/6W
R230	1-247-841-00	CARBON	2.7K	5%	1/6W
R231	1-249-429-11	CARBON	10K	5%	1/6W
R232	1-247-879-00	CARBON	100K	5%	1/6W
R233	1-247-831-00	CARBON	1K	5%	1/6W
R234	1-247-867-00	CARBON	33K	5%	1/6W
R235	1-247-867-00	CARBON	33K	5%	1/6W
R236	1-247-831-00	CARBON	1K	5%	1/6W
R238	1-247-819-00	CARBON	330	5%	1/6W
R239	1-249-425-11	CARBON	4.7K	5%	1/6W
R240	1-247-849-00	CARBON	5.6K	5%	1/6W
R241	1-247-841-00	CARBON	2.7K	5%	1/6W
R242	1-247-845-00	CARBON	3.9K	5%	1/6W
R243	1-249-421-11	CARBON	2.2K	5%	1/6W
R244	1-247-845-00	CARBON	3.9K	5%	1/6W
R245	1-247-879-00	CARBON	100K	5%	1/6W
R246	1-249-429-11	CARBON	10K	5%	1/6W
R301	1-247-224-00	CARBON	220	5%	1/2W
R302	1-249-433-11	CARBON	22K	5%	1/6W
R303	1-247-843-00	CARBON	3.3K	5%	1/6W
R304	1-249-425-11	CARBON	4.7K	5%	1/6W
R305	1-247-875-00	CARBON	68K	5%	1/6W
R306	1-247-903-00	CARBON	1M	5%	1/6W
R307	1-247-807-00	CARBON	100	5%	1/6W
R308	1-247-879-00	CARBON	100K	5%	1/6W
R309	1-247-224-00	CARBON	220	5%	1/2W
R310	1-249-437-11	CARBON	47K	5%	1/6W
R311	1-249-437-11	CARBON	47K	5%	1/6W
R312	1-249-425-11	CARBON	4.7K	5%	1/6W
R313	1-249-437-11	CARBON	47K	5%	1/6W
R314	1-214-777-00	METAL	100K	1%	1/4W
R315	1-249-429-11	CARBON	10K	5%	1/6W
R318	1-249-429-11	CARBON	10K	5%	1/6W
R319	1-249-414-11	CARBON	560	5%	1/6W
R320	1-247-844-00	CARBON	3.6K	5%	1/6W
R321	1-247-848-00	CARBON	5.1K	5%	1/6W
R322	1-249-429-11	CARBON	10K	5%	1/6W
R323	1-247-853-00	CARBON	8.2K	5%	1/6W
R324	1-247-853-00	CARBON	8.2K	5%	1/6W
R325	1-247-080-00	CARBON	5.6	5%	1/4W
R326	1-249-434-11	CARBON	27K	5%	1/6W
R327	1-249-429-11	CARBON	10K	5%	1/6W
R328	1-247-831-00	CARBON	1K	5%	1/6W
R329	1-249-421-11	CARBON	2.2K	5%	1/6W
R330	1-247-831-00	CARBON	1K	5%	1/6W
R331	1-249-421-11	CARBON	2.2K	5%	1/6W
R332	1-247-879-00	CARBON	100K	5%	1/6W
R401	1-247-751-11	CARBON	820	5%	1/2W
R404	1-247-212-00	CARBON	68	5%	1/2W
R405	1-247-212-00	CARBON	68	5%	1/2W

### ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R406	1-249-421-11	CARBON	2.2K	5%	1/6W
R407	1-247-867-00	CARBON	33K	5%	1/6W
R408	1-249-425-11	CARBON	4.7K	5%	1/6W
R409	1-247-811-00	CARBON	150	5%	1/6W
R410	1-247-823-00	CARBON	470	5%	1/6W
R411	1-247-815-00	CARBON	220	5%	1/6W
R412	1-247-815-00	CARBON	220	5%	1/6W
R413	1-247-819-00	CARBON	330	5%	1/6W
R414	1-249-429-11	CARBON	10K	5%	1/6W
R415	1-247-879-00	CARBON	100K	5%	1/6W
R416	1-249-433-11	CARBON	22K	5%	1/6W
R417	1-249-433-11	CARBON	22K	5%	1/6W
R418	1-249-429-11	CARBON	10K	5%	1/6W
R419	1-249-437-11	CARBON	47K	5%	1/6W
R420	1-249-425-11	CARBON	4.7K	5%	1/6W
R421	1-249-437-11	CARBON	47K	5%	1/6W
R422	1-247-879-00	CARBON	100K	5%	1/6W
R423	1-247-831-00	CARBON	1K	5%	1/6W
R424	1-247-879-00	CARBON	100K	5%	1/6W
R425	1-249-429-11	CARBON	10K	5%	1/6W
R426	1-247-859-00	CARBON	15K	5%	1/6W
R427	1-247-831-00	CARBON	1K	5%	1/6W
R428	1-247-831-00	CARBON	1K	5%	1/6W
R429	1-247-831-00	CARBON	1K	5%	1/6W
R430	1-247-831-00	CARBON	1K	5%	1/6W
R431	1-247-832-00	CARBON	1.1K	5%	1/6W
R432	1-249-419-11	CARBON	1.5K	5%	1/6W
R433	1-249-419-11	CARBON	1.5K	5%	1/6W
R434	1-247-831-00	CARBON	1K	5%	1/6W
R437	1-249-432-11	CARBON	18K	5%	1/6W
R438	1-247-795-00	CARBON	33	5%	1/6W
R439	1-249-429-11	CARBON	10K	5%	1/6W
R440	1-249-429-11	CARBON	10K	5%	1/6W
R441	1-247-857-00	CARBON	12K	5%	1/6W
R442	1-249-425-11	CARBON	4.7K	5%	1/6W
R443	1-247-809-00	CARBON	120	5%	1/6W
R444	1-247-833-00	CARBON	1.2K	5%	1/6W
R445	1-247-869-00	CARBON	39K	5%	1/6W
R446	1-247-873-00	CARBON	56K	5%	1/6W
R447	1-217-391-00	FUSIBLE	22	5%	1/4W F
R448	1-249-421-11	CARBON	2.2K	5%	1/6W
R501	1-249-429-11	CARBON	10K	5%	1/6W
R502	1-247-903-00	CARBON	1M	5%	1/6W
R503	1-247-841-00	CARBON	2.7K	5%	1/6W
R504	1-247-879-00	CARBON	100K	5%	1/6W
R505	1-249-432-11	CARBON	18K	5%	1/6W
R506	1-249-425-11	CARBON	4.7K	5%	1/6W
R507	1-249-433-11	CARBON	22K	5%	1/6W
R601	1-247-809-00	CARBON	120	5%	1/6W
R602	1-249-429-11	CARBON	10K	5%	1/6W
R603	1-247-867-00	CARBON	33K	5%	1/6W
RV101	1-228-995-00	RES, ADJ, CARBON	22K		
RV102	1-228-994-00	RES, ADJ, CARBON	10K		
RV201	1-228-995-00	RES, ADJ, CARBON	22K		
RV202	1-228-994-00	RES, ADJ, CARBON	10K		
RY301	1-515-535-11	RELAY			

ELECTRICAL PARTS

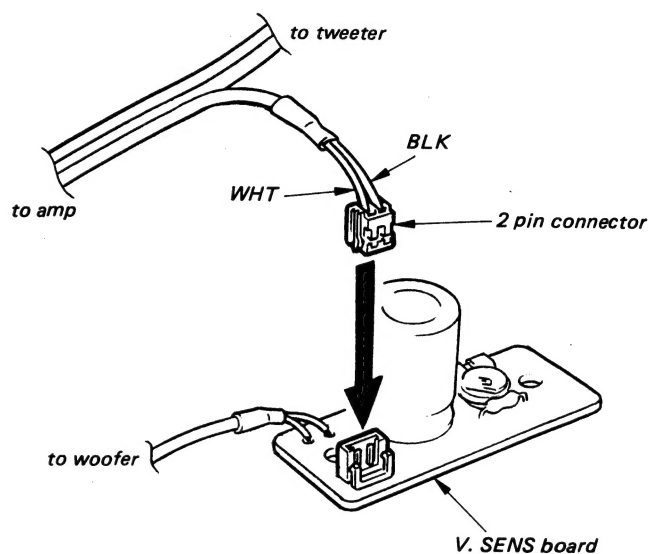
<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>
S1	1-554-691-00	SWITCH, SLIDE (DOLBY NR)
S2	1-554-691-00	SWITCH, SLIDE (TIMER)
S3	1-514-674-21	SWITCH, SLIDE (DIRECTION)
S301	1-554-277-00	SWITCH, SLIDE (ISS)
S601	1-553-856-00	SWITCH, KEY BOARD (STOP)
S602	1-553-856-00	SWITCH, KEY BOARD (REW)
S603	1-553-856-00	SWITCH, KEY BOARD (FF)
S604	1-553-856-00	SWITCH, KEY BOARD (FWD)
S605	1-553-856-00	SWITCH, KEY BOARD (REV)
S606	1-553-856-00	SWITCH, KEY BOARD (PAUSE)
S607	1-553-856-00	SWITCH, KEY BOARD (REC)
S608	1-553-856-00	SWITCH, KEY BOARD (REC MUTE)
S609	1-553-856-00	SWITCH, KEY BOARD (AMS)
S801	1-554-883-11	SWITCH, SLIDE (DIRECTION)
S802	1-553-856-00	SWITCH, KEY BOARD (HALF DET)
S803	1-553-856-00	SWITCH, KEY BOARD (70/120 U)
S804	1-553-856-00	SWITCH, KEY BOARD (METAL)
S805	1-553-856-00	SWITCH, KEY BOARD (ERASE PROOF/FWD)
S806	1-553-856-00	SWITCH, KEY BOARD (ERASE PROOF/REV)
SPK101	1-235-186-00	ENCAPSULATED COMPONENT
SPK201	1-235-186-00	ENCAPSULATED COMPONENT
T301	1-433-281-11	TRANSFORMER, BIAS OSCILLATOR
X501	1-527-532-00	OSCILLATOR, CERAMIC

# SPEAKER SYSTEM

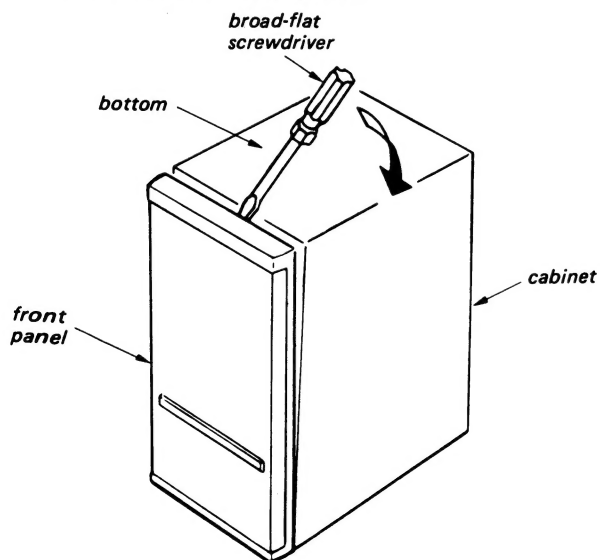
## [APM-177M]

### 【NOTES ON REPLACING WOOFER UNIT AND V. SENS BOARD】

- As woofer unit and V. SENS board (fixed on rear plate of speaker cabinet) are supplied as a block, replace them at the same time. Be sure to discard former V. SENS board. After replacing, there is no problem even if V. SENS board gets out of fixed position a little.
- Adjustable resistor (RV101) on V. SENS board has already adjusted with woofer unit. Therefore do not adjust it.
- Be sure to insert 2 pin connector as illustrated on the right.



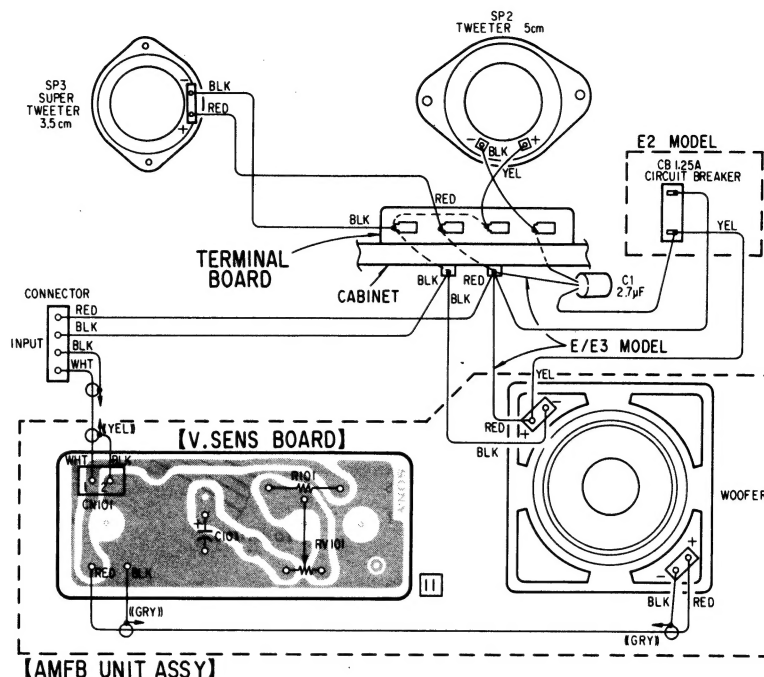
### 1. DISASSEMBLY FRONT PANEL REMOVAL



**Note:** Be careful not to scratch the cabinet.

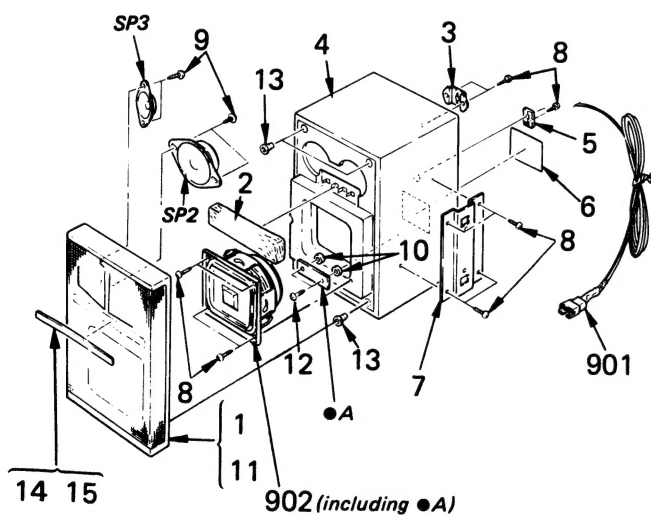


## 2. WIRING DIAGRAM



**Note:** Volume (RV101) cannot be replaced.

## 3. EXPLODED VIEW AND PARTS LIST



No.	Part No.	Description	Remarks
1	X-4910-067-1	PANEL (LEFT) ASSY (B), FRONT	
2	*4-910-045-01	ABSORBENT (C), ACOUSTIC	
3	*4-883-959-01	HOOK	
4	X-4910-046-1	CABINET ASSY, SPEAKER	
5	*4-914-306-01	CLAMP	
6	*4-910-397-01	(E)...LABEL, MODEL NUMBER	
	*4-914-311-01	(E2)...LABEL, MODEL NUMBER	
	*4-914-312-01	(E3)...LABEL, MODEL NUMBER	
7	*4-902-981-11	PLATE (B), SIDE	
8	4-874-614-11	SCREW (4)(3.5X14), TAPPING	
9	7-685-646-71	SCREW +BVTP 3X8 TYPE2 SLIT	
10	4-846-456-02	FOOT, FELT	
11	X-4910-068-1	PANEL (RIGHT) ASSY (B), FRONT	
12	7-685-148-01	SCREW +P 3X12 TYPE1	
13	*4-872-922-02	CATCHER	
14	4-914-332-01	PLATE (LEFT), ORNAMENTAL	
15	4-914-331-01	PLATE (RIGHT), ORNAMENTAL	

### ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	1-558-469-11	CORD, SPEAKER
902	X-4910-076-1	(E).....AMFB UNIT ASSY
	X-4910-077-1	(E2/3)...AMFB UNIT ASSY
C1	1-123-545-00	ELECT 2.7MF 20% 50V
C101	1-123-311-00	CAP, ELECT 1000MF
CB	1-532-664-00	(E2)...CIRCUIT BREAKER, 1.25A
R101	1-247-698-11	RES, CARBON 68
SP2	1-503-590-11	SPEAKER (5CM CONE TYPE)
SP3	1-503-591-11	SPEAKER (3.5CM)